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DECEMBER 2023

SPECIAL FEATURE:
PLANT PROFICIENCIES | 18

IN MY WORDS:
An early career boost | 66

Ashley Roberts
Laboratory Manager
Hampton Roads, Va.

Fired Up for Testing

ASHLEY ROBERTS BRINGS HIGH ENERGY AND A STRONG WORK ETHIC TO HER ROLE AS LAB MANAGER 10

LET'S BE CLEAR:
Wipes: A manufacturer perspective | 6

TECHNOLOGY DEEP DIVE:
Centralized data management | 70

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- Wash Press

contents

December 2023

SPECIAL SECTION: plant PROFICIENCIES 18

top performers

coming next month: January 2024 FOCUS: Reuse, Recovery and Energy Management

» Let's Be Clear: Dealing with "quiet quitting" » TOP PERFORMERS – Wastewater Operator: Alvin Rucker, Lynchburg, Virginia | Wastewater Operator: Rich Mickelsen, American Fork, Utah | Water Operator: Brian Boswell, South Columbus, Georgia » Prepping for direct potable reuse in Florida » In My Words: Veolia makes its expansive online course offerings available for free » Sustainable Operations: A Texas utility's native plant and pollinator garden » Hearts and Minds: Virtual facility tour at Maryland's largest water and sewer utility » Technology Deep Dive: Mentor APM asset management tool

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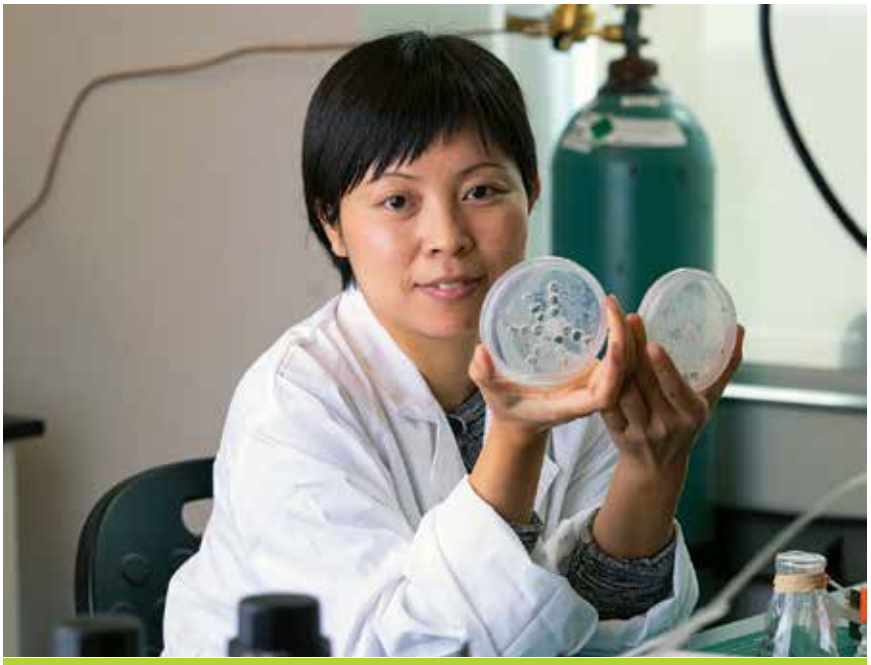

MICROPLASTICS REMOVAL

A Novel Approach

A Texas A&M AgriLife study recently showed that fungal isolates can remediate potentially harmful microplastics in aqueous environments. The study yielded encouraging findings on removing polystyrene and polymethyl methacrylate microplastics and nanoplastics using isolated fungal strains.

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OVERHEARD ONLINE

"All jobs are dependent on other people doing their jobs, so there's a domino effect when employees suffer from imposter syndrome."

How to Fight Imposter Syndrome and Lead with Confidence
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THE MINUS APPROACH

Disinfection Methods

Chlorine has long been the standard for water treatment, but it often contains trace levels of disinfection byproducts and contaminants. That's why Georgia Institute of Technology researchers recently developed "the minus approach," which uses a mix of filtration methods to remove byproducts, allowing treatment plants to use UV and smaller chemical doses.

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SOLAR ENERGY AT WWTPS

Podcast Explores Ideas

The latest episode of Penn State University's Growing Impact podcast explores how wastewater treatment plants could use solar power to improve their environmental performance, their communities and their finances. Learn more about it in this online exclusive article.

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tpo TREATMENT PLANT OPERATOR

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Wipes: The Product Industry's Side

THE RESPONSIBLE FLUSHING ALLIANCE TEACHES ABOUT WIPES FROM THE PAPER GOODS COMPANY PERSPECTIVE. THAT DOESN'T MEAN ITS MESSAGES LACK VALUE.

By Ted J. Rulseh, Editor

I've always been suspicious of big-business-sponsored coalitions with innocent-sounding names that advocate for an industry's side on controversial issues.

So my hackles went up a few years ago when I learned about the Responsible Flushing Alliance, a group representing the wipes industry, whose products have been and remain a significant source of blockages in sewers and other problems in wastewater facilities.

Groups like these generally put the most positive spin possible on a product or practice that allegedly or actually does some kind of harm. They do this in part by manipulating facts and statistics in hopes that less-than-discerning people will accept their point of view or at least soften their opposition.

In my opinion, the Responsible Flushing Alliance does this to some degree. At the same time, I give the alliance credit for offering some information and advice that's useful to consumers and potentially helpful to clean-water agencies dealing with wipes-related issues.

I also believe the alliance (see the list of members at flushsmart.org) is sincere in wanting to work with clean-water utilities to solve problems. After all, it's in the industry's interest to fix things voluntarily rather than face product marketing restrictions, regulations or lawsuits.

A BIT OF SMOKESCREEN

That said, let's start with where I think the alliance's arguments mislead. On the homepage of the website there's a graphic headlined "The Real Problem."

The text below says, "Studies show that 98% of materials that clog equipment at wastewater treatment plants are nonflushable, such as baby wipes, paper towels, feminine hygiene products, cleaning wipes and other trash not designated to be flushed."

I have no reason to doubt this — trash flushed down toilets cause sewer systems clogs long before wipes became widely popular household products. Well, then, if the data is accurate, what's wrong with the statement?

It's misleading because no one alleges that flushable wipes are the problem. The "real problem" is wipes in general, and that includes nonflushable wipes that are labeled on packaging as flushable because they don't quickly disintegrate in the wastewater stream.

HERE'S THE BREAKDOWN

Let's look at the data a little more closely. A graphic on the website refers to an analysis of debris collected on bar screens in a pump station in Jacksonville, Florida. The data found five types of debris:

- Nonflushable baby wipes, 37%
- Nonflushable feminine hygiene products, 19%
- Nonflushable paper, 28%

- Nonflushable household wipes, 15%
- Flushable wipes, 1%

In other words, 57% of the debris items collected were wipes. That is a significant problem that the wipes industry seems to be trying to downplay.

KEYS TO PROGRESS

That aside, the industry has acknowledged that there are three key steps toward addressing the wipes problem:

- Make more products truly flushable according to a set of agreed-upon standards
- Clearly label packaging so consumers can tell which wipes are flushable and which are not
- Educate consumers not to flush wipes that are not labeled and certified as flushable

I believe, based on my exploration of this topic over recent years, that at least some industry players are making good-faith efforts on these three fronts.

WHAT'S TO LIKE?

Here are some features of the Responsible Flushing Alliance website that I consider helpful. Several graphics provide a basic education in wipes and their characteristics. For example, one enumerates four basic differences between flushable and nonflushable wipes.

Another describes the qualities of wipes designed for different purposes: baby wipes, anti-bacterial cleaning wipes, spa wipes, medicated wipes, moist novelettes, facial wipes and flushable wipes. All this is useful information for consumers to have.

Two videos on a "Myth vs. Fact" page are also noteworthy. One lighthearted presentation shows several people being quizzed on which materials can be flushed and which should not be. The other takes viewers on a tour of a 110 mgd wastewater treatment plant in Columbus, Ohio. The video shows headworks screens capturing wipes and other paper items.

I give the alliance credit for offering some information and advice that's useful to consumers and potentially helpful to clean-water agencies.

And then there's kid stuff: activity books, worksheets, art projects, puzzles, games and more. Reaching kids on issues like this is always good, and they can be great influences on their parents and so make entire households into more responsible flushers.

WHO SEES IT?

The proof of the pudding is who sees and so benefits from the information on this website. The reality is that initiatives like the Responsible Flushing Alliance typically are not very well funded. For example, you don't see these messages being translated into advertising on popular TV programs, websites and other venues. At least I have not seen anything of the sort.

Still, if I were a clean-water operator, or a public education coordinator at a clean-water utility, I wouldn't mind referring people in my community to flushsmart.org. It's not perfect, but it could help get some important points across. **tpo**

advertiser index

December 2023

Fill 'er Up

A CALIFORNIA UTILITY ESTABLISHES WATER BOTTLE FILL STATIONS IN SCHOOLS AND COMMUNITY CENTERS TO PROMOTE THE HIGH QUALITY OF TAP WATER

By Sandra Buettner

Students and staff at schools can stay hydrated with cold tap water from newly installed water bottle filling stations like this one provided by Eastern Municipal Water District. The stations help reduce usage of plastic throwaway water bottles.

The Eastern Municipal Water District's Hydration Station van shows up at public events to help keep participants hydrated with ice-cold water.

Eastern Municipal Water District created water bottle fill stations for its schools and community gathering places to promote its tap water. The staff, with support from the board of directors for the utility in Perris, California, came up with the idea in 2014 because some residents had negative perceptions of tap water versus bottled water.

"A lot of people are not educated on where their water is coming from," says Amanda Fine, public affairs manager. "They assume bottled water is better when in reality many bottled water producers get their water from entities like us."

The district provides drinking water, wastewater treatment and recycled water to nearly 1 million people within a 558-square-mile service area in western Riverside County. In addition to water filtration, the utility treats 43 mgd of wastewater per day arriving through more than 1,800 miles of sewer pipeline.

RULES OF ENGAGEMENT

The bottle fill station program was promoted through flyers, park districts and the utility's website, but mostly through word of mouth. On the website during late summer, the district sends a notice that school will soon start and that parents are reminded to pack their children's reusable water bottles.

> "A lot of people are not educated on where their water is coming from. They assume bottled water is better when in reality many bottled water producers get their water from entities like us."
> **AMANDA FINE**

The fill stations help promote tap water quality, environmental stewardship and reusable water bottles. There are 126 water fill stations in the community, 115 of them at schools. Other locations include libraries, park departments, community centers and county agencies. The recipients are encouraged to place them in highly visible spots protected from the elements.

"Our mission is to serve our community today and tomorrow," says Fine. "What a better way to promote accessibility and availability of clean, reliable tap water than to support our schools and public community centers by placing fill stations at these sites?"

Only one unit is supplied and installed free of charge. If a school or community center wants another unit, the utility delivers it, but the recipient must install and maintain it.

To qualify for a unit, the site must be located within the utility's service area. The recipient must agree to a co-branded sign with its own and the utility's logo, and must maintain the unit and signage for at least five years. The sign contains the words "Quality, Reliability and Value," with an icon representing each word.

HONORS FOR THE MASCOT

Patrick the Poo, mascot for the Eastern Municipal Water District, received a 2022 National Environmental Achievement Award from the National Association of Clean Water Agencies for excellence in public information and education.

A viral video sensation, Patrick the Poo has amassed nearly 100,000 views on YouTube. He teaches children and adults the importance of protecting the sewer system. Patrick was introduced in 2019. His Sewer Smart messaging has been instrumental in the district's campaign to promote environmental responsibility and water supply sustainability.

Wastewater is the district's largest customer segment with more than 260,000 accounts. Patrick's message teaches customers to keep the system clear of FOG and prescription drugs, helping to protect sewer system infrastructure and recycled water quality, and ultimately groundwater quality.

FILL FACTS

The units come in single or bi-level configurations. A counter on the unit ticks higher to indicate how many plastic bottles are saved. Every time a user fills up with 16.9 ounces (the amount in a half-liter disposable bottle), the counter goes up one tick.

Traffic to the units ebbs and flows depending on whether school is in session. As of 2019, the 126 units had kept 500,000 plastic water bottles from going to landfills. The units contain a chiller to dispense cold tap water. They are compliant with the Americans with Disabilities Act. They have a rapid fill rate of 1 to 1.5 gpm, and their stainless steel exteriors are easy to clean. The utility website shows the locations of all the fill stations.

MOBILE HYDRATION

Besides the fill stations, the district has a water fill van known as the Hydration Station. It stated as a multifaucet fill station deployed at exhibit booths. Later it became a van that pulls up to events within the eight cities and the unincorporated areas in the service territory.

The van is deployed at events including Library Day, grand openings, spring and fall festivals, and other community events. It has a chiller and a water tank but also can be connected to a tap water source to maximize the supply. The van has its own generator that charges a battery bank, which runs all van's accessories.

District workers staff the unit and provide literature and information to attendees about tap water and how the van and water fill stations are saving disposable bottles from being landfilled. Most attendees bring reusable bottles and fill up at the events, but for those who don't have one, the utility provides paper cups made of material that can be composted or recycled.

Once the van started going to multiple events, people began asking if their pets could get water. Some bring collapsible water bowls clipped to dogs' leashes; if they don't have one, the utility supplies them.

"The Hydration Station and the water fill stations are increasingly popular with the public and our residents," says Fine. "They are becoming educated on how great our tap water is." **tpo**

What's Your Story?

***TPO* welcomes news about your public education and community outreach efforts for future articles in the Hearts and Minds column. Send ideas to: editor@tpomag.com or call 877-953-3301**

Ashley Roberts, laboratory manager, Hampton Roads Sanitation District

Fired Up for Testing

ASHLEY ROBERTS BRINGS HIGH ENERGY, A POSITIVE ATTITUDE AND A STRONG WORK ETHIC TO HER ROLE AS A LAB MANAGER WITH THE HAMPTON ROADS SANITATION DISTRICT

STORY: **Ted J. Rulseh**
PHOTOGRAPHY: **COLE Publishing**

Roberts and George Decatur, chemist, inspect samples for bacteria.

On completing her degree in chemistry Ashley Roberts wasn't sure where she would go to work. She did have a clear idea what she would be doing.

"I enjoyed the labs while I was taking all my classes," she recalls. "It was the most interesting thing to me. I told my professor, 'I don't know where I'm going to end up, but I'm going to be testing something.'"

Several months after graduation from Virginia Wesleyan College in 2013, she landed at the Hampton Roads Sanitation District, where she performed all manner of tests important to keeping the district's clean-water plant processes in control and effluent in permit compliance.

Today, after a series of promotions, she is one of four laboratory managers in the district's Central Environmental Laboratory Division, which has some 50 team members and is accredited for 76 methods with 406 analytes. She is also the winner of the 2022 Water Environment Federation Laboratory Analyst Award from the Virginia Water Environment Association.

Stacie Crandall, chief of the district's Laboratory Division, observes, "Ashley exhibited excellent technical expertise and supervision in our wet chemistry section. Since becoming a manager, she has shown herself to be a great communicator. She is assertive when she needs to be and is confident in her knowledge. She ensures that training for her team is adequate and that we are meeting method and regulatory requirements."

HIGH ENERGY

Roberts, a Virginia native, applied for lab jobs in the medical and food industries before taking a part-time lab technician job with the HRSD in October 2013. Five months later she was promoted to full-time status. A few months later she earned another promotion, to lab specialist, a position she held for three years.

She was elevated to chemist in 2017 and in 2022 became one of four lab managers, each of whom oversees sections of the laboratory. Roberts is responsible for the microbiological section and the demand section, which measures parameters such as BOD and COD. In total, she supervises 14 analysts including lab technicians, specialists and chemists.

Ashley Roberts, Hampton Roads (Virginia) Sanitation District

POSITION:
Laboratory Manager

EXPERIENCE:
9 years in the water industry

EDUCATION:
Bachelor's degree, chemistry, Virginia Wesleyan College

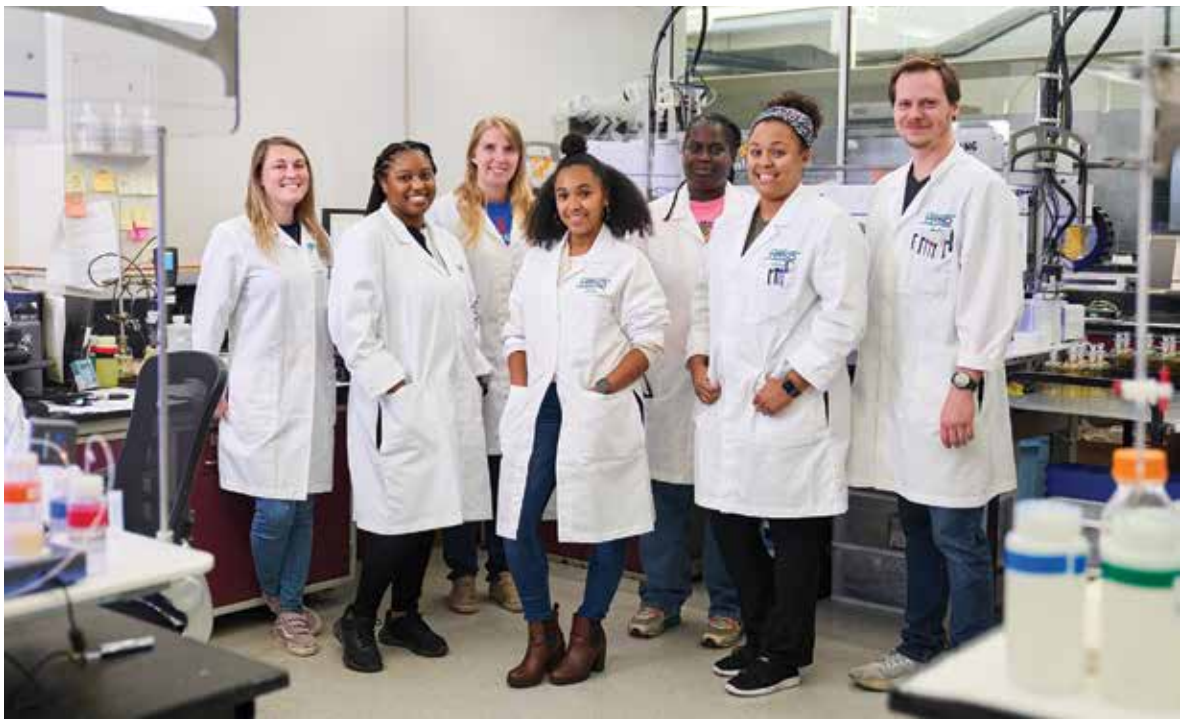
AWARDS:
2022 WEF Laboratory Analyst Award, Virginia Water Environment Association

GOALS:
Continue learning, earn an advanced chemistry degree, pursue future promotions

For her quick rise in the organization she credits her love for testing, her flexibility and her personality. "If you meet me in person, I am this 4-foot-11 tiny little thing, but I am a huge ball of energy. I was able to bring a positive environment to working.

"If you see me in the morning, I'll say, 'Hey, how are you? What's going on? Tell me about your day.' If you come into work feeling a little gloomy and walk past me, it will be hard to continue that mood.

"I was a very positive leader, ensuring that everybody had what they needed. And I was a hard worker. There was nothing you could ask of me that wouldn't get done in a timely manner. When I had to choose between the highest priorities versus what just needed to get done at some point, I was pretty good at that. I think all that made me a good candidate for lab manager. I was volunteering to come in on holidays and weekends.



The team at the Hampton Roads Sanitation District laboratory includes, from left, Christine Thompson, Keaira Montgomery, and Suzie Adams, lab specialists; Ashley Roberts, lab manager; Myra Alcorn and Latrelle Patton, lab specialists; and Justin Spite, chemist.

> "If you meet me in person, I am this 4-foot-11 tiny little thing, but I am a huge ball of energy."
> **ASHLEY ROBERTS**

"I'm in a different role now. Instead of doing what I told my professors I would do, I'm overseeing and scheduling projects and making sure they get done."

WELL EQUIPPED

The Hampton Roads district operates eight major wastewater treatment plants and six smaller plants. The Central Environmental Laboratory Division provides tests for internal process control and regulatory purposes.

In addition, it performs sampling for the industrial pretreatment program, and its Municipal Assistance Program offers environmental monitoring and analytical services at cost to government agencies and smaller communities throughout Virginia. All told, the lab tests nearly 85,000 samples per year.

All these services require well-qualified staff and sophisticated equipment. The district uses these key technologies:

- Filtration racks and filtration apparatus for TSS analysis
- Robotics for BOD
- Flow injection analysis equipment for total nitrogen and total phosphorus measurement
- Combustion analyzer for TOC analysis
- Ion chromatography analyzer for anions such as chloride, fluoride, sulfate and bromide
- Gas chromatograph for organic compounds
- Inductively coupled plasma and other instrumentation for metals analysis

Other equipment includes microscopes for microbiological analysis, conductivity meters and spectrophotometers for various analyses performed infrequently. Instruments are rigorously maintained and calibrated. "We perform a lot of preventive maintenance on our analyzers to ensure that they are available when we need them the most," says Roberts.

DAILY CHALLENGES

As a lab manager, Roberts supervises chemists Justin Spute and George Decatur. She also works closely with the three other lab managers: Dr. Li

Roberts, shown with Myra Alcorn testing samples for BOD in a robotic handling system, aspires to earn a master's degree in chemistry.

CAKES AND CHEMISTRY

As a lab manager Ashley Roberts no longer spends her days mixing reagents and performing tests. She thinks maybe that's a reason she has taken to baking and decorating cakes as a sideline to her job with the Hampton Roads Sanitation District.

"Essentially, baking is chemistry," Roberts observes. Her extremely part-time venture, Cake with a Side of Frosting, lets her continue enjoying the hands-on aspect of that science.

She started decorating cakes shortly before the birth of her daughter Bailey, now age 10.

"I recall making her first birthday cake, and it was a train wreck," she says. Still, she enjoyed the process greatly and soon was making birthday cakes regularly for her daughter, son Carter, age 8, and a niece and nephew.

"I just kept getting better and better at it, and more people would ask me for cakes," she recalls. "Finally after having friends tell me, 'You really should start a small business,' I opened it to other people." On a typical weekend she turns out two or three cakes or batches of cupcakes, right in her kitchen at home.

Zhang, organics; Robin Parnell, metals and solids; and Kerri Williams, nutrients and wet chemistry. The team also includes Reginald Morgan, quality assurance manager; and Edwin Strange, systems manager.

For Roberts, a key challenge is leading team members who do kinds of testing outside her core area of expertise. "While I may not know how to run the particular instrument, as their manager I'm responsible for knowing the ins and outs of the analysis — the theory behind it and a general idea of how the analyzer works," Roberts says.

"So if they tell me that one of their quality controls is out of its required range and they don't know why, I assist in troubleshooting, such as asking about the reagents used for this analysis. When was the last time the reagent was made? Was the balance that weighed the reagent properly calibrated? If it's an analyzer that isn't functioning properly, I look at when it was last calibrated. I look at everything that goes into the analysis."

Another challenge is scheduling to ensure that enough people are on duty to handle the workload. To that end, cross-training is valuable. While the chemists function as specialists in their areas, the specialists and technicians are cross-trained. "We call them floaters," says Roberts. "They can float within any section as long as they've been trained for that area."

A KEY PRIORITY

HRSD invests heavily in training for lab personnel. The length and extent of training for entry-level technicians have been established through years of experience. "It takes at a minimum a month to train someone on an analyzer to pretty much cover every scenario," Roberts says.

The new team member is paired with a chemist who explains the theory behind the analysis, the workings of the analyzer, the reagents used, and the standard operating procedures for doing the analysis. The trainee first observes and is encouraged to ask questions. "If anything goes wrong, they see the troubleshooting methods," Roberts notes.

The trainee then gets increasing levels of hands-on experience and then takes on full days of work under the chemist's observation and critique. After training comes essentially an oral exam given by the lab manager. After a satisfactory outcome, the technician performs a demonstration of capability before being signed off to work independently. Lab analysts are required to recertify annually.

Retaining personnel is a high priority. The district focuses on employee retention by offering opportunities for development in addition to annual step increases in pay based on merit reviews. The district pays in full for continuing education, including pursuit of bachelor's or master's degrees and also provides internal training for leadership skills, team building exercises across departments, Toastmasters for developing public speaking skills, and other continuing education programs.

CONNECTING WITH OPERATIONS

Lab results play an essential role in keeping the treatment plant operating efficiently. Lab personnel interact with the treatment plant engineers who oversee operations. The engineers can order special testing if, for example, an effluent parameter is drifting toward noncompliance or a new technology is being brought online.

A major challenge for the lab is the district's Sustainable Water Initiative for Tomorrow, which takes water that otherwise would be discharged to receiving waters, subjects it to advanced treatment to bring it to drinking-water quality, and uses it to replenish the Potomac Aquifer, the region's primary source of groundwater.

The additional treatment includes flocculation/sedimentation, ozone contact, biologically active filtration, granular activated carbon treatment, UV disinfection and chlorine contact. These steps ensure that SWIFT Water meets federal primary drinking-water standards while providing added controls for unregulated contaminants such as personal care products, pharmaceuticals and other contaminants. The SWIFT Research Center in Suffolk has the capability to recharge 1 mgd of water into the aquifer.

Roberts sees the SWIFT initiative increasing the lab's workload significantly, in part to test for various organic compounds, eventually including PFAS. "We have had to add many positions in support of that," Roberts says.

Ashley Roberts, pictured with chemist George Decatur, in 2022 became one of four managers who each oversee a section of the laboratory.

> "I definitely enjoy my job. HRSD has prepared me well. It's a great organization to work for."
> **ASHLEY ROBERTS**

CAREER PATH

For the future, Roberts aspires to earn a master's degree in chemistry and to advance in her career, but for now she's happy where she is: "I have two kids, 10 and 8 years old, and keeping them on track with school and sports, I'm pulled in a million directions. Maybe when things calm down I'll go back and add some extra letters after my name. Right now I'm continuing to learn my job. I learn something new each day."

Lab Chief Crandall notes, "Ashley brings positivity to any situation she is involved in. She is able to work through corrective action, looking for the silver lining, and making weaknesses into strengths and negative outcomes into positive learning opportunities. She is really the whole package as a laboratory manager."

Roberts has earned various recognitions beyond her Laboratory Analyst Award. While a chemist she performed method development for multiple analyses and was a primary participant in three VELAP Assessments, including TOC analysis.

She has served as a judge for a regional science and engineering fair, has taken part in career-related outreach events, and has been an instructor for the HRSD's nationally recognized Operator Apprenticeship Program.

"I definitely enjoy my job," she says. "HRSD has prepared me well. It's a great organization to work for. If anyone comes in this direction looking for a job, they should make HRSD their home." tpo

A Picture of Quality

FROM ATTRACTIVE BUILDINGS AND GROUNDS TO CLEAN FINAL EFFLUENT, THE CROOKED CREEK WATER RECLAMATION FACILITY MAKES AWARD-WINNING IMPRESSIONS

STORY: **Jim Force**
PHOTOGRAPHY: **Kaylin Gilstrap**

> "We're known for a high standard of operation, and a high-quality effluent that's well below permit requirements. We're proud of that."
> **DAVID JONES**

Edward Appiah cleans the weirs of a secondary clarifier.

LEFT: The team at Crooked Creek Water Reclamation Facility includes, from left, Cody Reece, wastewater manager; Marlon Parras, warehouse technician; Joey Foss, instrumentation technician; Joel Craig, wastewater technician; Alexander Defranza, trades technician; Lucy Shuman, intern; Tim Kring, shift supervisor; Kevin Young, trades technician; Alex Head, planner/scheduler; Edward Appiah, wastewater technician; Donald Loggins, trades technician; and David Jones, operations superintendent.

Crooked Creek Water Reclamation Facility

Gwinnett County, Georgia

gwinnettcounty.com

BUILT:
1980s; rebuilt 2017-2021

POPULATION SERVED:
320,000

FLOWS:
16 mgd design, 8.4 mgd average

TREATMENT LEVEL:
Tertiary

TREATMENT PROCESS:
Activated sludge, cloth filtration

RECEIVING STREAM:
Chattahoochee River

BIOSOLIDS:
Dewatered, landfilled

AWARDS:
Plant of the Year award 2022, 2020, 2018, Georgia Association of Water Professionals; Platinum Peak Performance Award, NACWA, 17 consecutive years

ANNUAL BUDGET:
$4.6 million (operations)

The Crooked Creek Water Reclamation Facility is so well maintained that a visitor once mistook it for something else.

"A lady walked up to the gate by accident, not knowing what the facility was, and said she thought she was at a school," recalls David Jones, plant superintendent.

The modern buildings, well-maintained landscaping, and high-quality effluent have been major factors in the Crooked Creek facility winning the Georgia Association of Water Professionals Plant of the Year in 2022, as well as 2018 and 2020.

On top of that the plant, operated by the Gwinnett County Department of Water Resources, has attained the Platinum Peak Performance Award from the National Association of Clean Water Agencies for the last 17 years, for having no permit violations.

"What's special about this plant are the aesthetics and the work being done here," Jones says. "It's a beautiful facility. We're known for a high standard of operation, and a high-quality effluent that's well below permit requirements. We're proud of that."

CREATING VETERAN STAFF

An internship program is helping the Gwinnett County Department of Water Resources staff up for the future and fill holes left by retiring veterans.

The beneficiaries include the county's wastewater treatment plants, as many of the interns have ultimately joined the clean water profession. "Three out of our last four interns have joined the county water resources department," says David Jones, superintendent at the Crooked Creek Water Reclamation facility.

Many of the interns are recruited at job and career fairs run by the county's Department of Human Resources. Others have developed an interest after taking tours of the treatment facilities. "The county has hundreds of tours," says Jones. "They work."

Others find out about the internships through the county's website or plain old word-of-mouth.

Some new recruits come right out of high school. Others have college experience, even degrees. "One of our interns right now has a bachelor's degree in environmental sciences, and is pursuing her master's," Jones says. "It's a 24-hour-a-week position, lasting for one year."

As with any intern program, staff members must take time to orient new people. "It requires training, and that's both the greatest part of the job and one of the hardest," Jones says. "We dedicate a lot of time to training. It pays off in the future. We try to show these new men and women the world of work in wastewater treatment — the value of what we're doing, the data we're gathering."

Most of the time, it takes six to eight months to prepare a new team member, and after two to two and a half years, that person becomes truly ready and knowledgeable. "We have a lot of veteran staff who are moving on to retirement, some with 30 or more years of experience," says Jones. "With new hires, there is always a learning curve. But if we adequately train people, they will be of value to the industry for many, many years. This is how veterans are made."

PART OF A SYSTEM

The Crooked Creek WRF, in Norcross, is one of three wastewater treatment plants serving Gwinnett County, northeast of Atlanta. It's designed for a dry-weather flow of 16 mgd; average flow is about 8.4 mgd. The plant was designed for reliability, ease of operation and maintainability. "Every process has redundant systems," says Jones. "It makes life easier!"

Wastewater enters the treatment train through an influent pump station (KSB pumps), and passes through four grinders (JWC Environmental) before entering the headworks. JWC band screens remove rags and debris, and grit is removed by a PISTA Grit system (Smith & Loveless).

A return/waste activated sludge mixing box follows, after which the flow passes to a pair of side-by-side plugged-flow bioreactor trains, each containing anoxic, anaerobic and seven aerated zones. Howden Roots Turblex blowers provide aeration. Magnesium hydroxide is added ahead of the bioreactors for alkalinity and pH control. Alum is added at the end of biological treatment for phosphorus removal and to aid in settling.

The treated water settles in clarifiers with Tow-Bro headers (Evoqua Water Technologies). Two of the four settlers are in operation at any one time. The clarifier overflow enters a set of automatic-backwash AquaDiamond tertiary cloth filters (Aqua-Aerobic Systems), and then to two Duron UV disinfection channels (Wedeco), each channel containing 108 bulbs. Final effluent passes over a post-aeration step before discharge to the Chattahoochee River.

Donald Loggins adjusts the pressure on a belt filter press (BDP).

Thermal images are analyzed for hot spots that indicate issues needing attention (Fluke Corp.).

HANDLING SOLIDS

Biosolids are stored in a pair of aerated tanks, then treated with polymer and dewatered on four 2-meter belt presses (BDP). Cake at 18.2% solids is hauled to landfill. Press filtrate is stored and then metered back to the head of the treatment process. The plant accepts an average of 20 septage trucks a day. Jones says septage has little to no impact on plant nutrient loading.

A new SCADA system was supplied by AVEVA. The computerized maintenance management system is from Maximo (IBM). The plant is moving ahead with plans for operators to have handheld devices, enabling them to complete plant checks and pass down daily activities between shifts.

Crooked Creek is staffed by 14 operators under Jones and Cody Reece, plant manager. A maintenance team keeps the equipment and facilities in top shape. The operations team includes:

- Timothy Kring and Darryl Miles, shift supervisors
- Wastewater technicians Edward Appiah, Philip White, Kevin Young, Danielle Hines, Joel Craig, Rory Cavagnaro, Jackson Rivers, Dionte Ryals, Nicholas Dillon and Maclellan Hicks; interns Alexandria Coffman, Jason King, and Lucy Shuman
- Richard Anderson, trades coordinator; and Donald Loggins, Carl Fincher and Alexander Defranza, trades technicians
- Joey Foss, SCADA technician
- Alex Head, planner/scheduler
- Marlon Parras, warehouse technician

BIG RENOVATION

The Crooked Creek plant went through a major upgrade from 2017-21. While the influent station and headworks remained unchanged, the downstream processes underwent major work in a $136 million renovation. The old oxidation ditches were replaced with the new bioreactor system, which improved treatment and added capacity, especially for wet-weather flows.

Two existing secondary clarifiers were retained and upgraded with new equipment, and two new ones were added. While the automatic backwash filters remained the same, the UV disinfection system was new; the open-channel system replaced a pressurized vessel technology.

A new biosolids handling system was added, complete with the four new belt presses. In addition to many structural changes, which required significant earth moving and new concrete, the project involved an overhaul of

Phillip Burch performs infrared thermography in the main switchgear building (ABB Group Evolution Series E9000 motor control center).

David Jones, operations superintendent

the plant's electrical system and controls. The SCADA system, plant switchgear (Emerson), and standby diesel generators (Caterpillar) were all upgraded.

KEYS TO SUCCESS

Jones, who was plant manager at the start of construction, says communication and relationships were essential to the project. His staff took the lead in making things work: "We relied on close cooperation among all parties — our staff, the contractors, the engineers. That was the No. 1 thing. We've worked with several of the project team members for years and had established relationships that helped."

Still, it was sometimes difficult to keep things on track with different minds involved. "We had lots of meetings," Jones says. "There were shutdowns and bypasses, some of them occurring at three in the morning and lasting for days. We documented everything and had dry runs to make sure we were all on the same page with planning and coordination, preparing for the moment."

> "We're a fast-growing county. We will have to stay ahead of that growth."
> **DAVID JONES**

Jones saw the opportunity for his staff to be on site and monitor the changes to the plant as a big plus. The change from oxidation ditches to the bioreactors was a critical event: "Operators were a big factor in the success of the total construction project. Everything depended on trust and communication."

PRIDE IN PERFORMANCE

Communication with neighbors was also important. An apartment complex borders the plant on one side, and a residential community sits just north of the plant. "Even before the construction, we did an excellent job of controlling odors and operating at a high standard," says Jones. "Not many of the residents realized the plant was here. The team used signage to make sure traffic ran smoothly during construction. Police officers helped direct traffic at peak times."

With more than 100 construction workers at the site at any given time, arrangements were made for them to park their vehicles in a nearby church lot. Shuttle buses took them to the work site to avoid traffic jams. Construction crews made a special effort to keep the noise down: "It was a very smooth project all the way around. We were never offline during construction."

Jones is especially pleased about the Plant of the Year awards — in 2018 as construction began, in 2020 in the middle of the project, and in 2022 when work was complete. Jones believes the awards recognize violation-free performance and reflect the standards the plant has for the documentation of operations and aesthetic value.

Now that the construction dust has settled, new challenges lie ahead. "We're a fast-growing county," Jones notes. "We will have to stay ahead of that growth." PFAS and other emerging contaminants, and the accompanying regulations, also pose a challenge. But Jones feels Crooked Creek will be up to the tasks ahead: "It's our caring staff." **tpo**

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Achieving Successful Dosing of Viscous or Abrasive Chemicals

A variety of challenging chemicals are often needed in order to meet treatment goals for drinking or wastewater operations.

Polymers. These high viscosity fluids are used for flocculation and coagulation to aid in the removal of solid particles. It is crucial to use a metering pump that will precisely and gently dose long-chain polymers without causing damage to them.

Caustics. The pH in both drinking water and wastewater must maintain certain levels to meet regulatory demands. pH is most often adjusted using chemicals such as sulfuric acid, hydrochloric acid, phosphoric acid, sodium hydroxide and calcium hydroxide. These chemicals can be caustic.

Disinfection is often achieved using sodium-hypochlorite (chlorine) or peracetic acid. These are familiar chemicals to operators, but they bring their own challenges. Both chemicals are off-gassing which can lead to vapor lock and loss of prime. Peristaltic pumps are extremely effective when dosing fluids that contain trapped gasses; bubbles simply pass through the tube so there is no vapor lock or loss of prime.

SOLUTIONS TO DOSING CHALLENGING CHEMICALS

Peristaltic Pumps, such as Blue-White's FLEXFLO M3, are often considered the best choice for dosing caustic, abrasive and viscous liquids. The smooth, gentle peristaltic pumping motion gently moves delicate fluids through the pump tube without damage.

Operators should check for material compatibility. It is important for peristaltic pump operators to choose a pump tube material that is compatible with the chemical being metered. Manufacturers generally offer a range of tube material options and should have a compatibility chart available. It pays to do the research and discuss the challenges in advance of installation and setup.

It's also important to choose the correct tubing size. Larger orifice tubes can often be the simple solution when dosing highly viscous or abrasive fluids. The larger diameter makes it easier for thicker fluids to flow through the tube and reduces resistance against the tube walls.

Operators may consider installing a foot valve in their metering setup, or use a pump that has a foot valve strainer already built in, to help filter out excess particles in abrasive chemicals, and/or improve flow efficiency which is helpful for handling viscous fluids.

Tube failure detection is also crucial. One of the most important advantages when choosing a peristaltic metering pump is the isolation of the chemical being dosed from the mechanical components. However, if the tube fails, this barrier could break down, causing damage to the pump mechanism and other equipment should the leak go undetected.

For this reason, Blue-White FLEXFLO peristaltic pumps are equipped with a built-in tube failure detection feature which stops the pumping action when leaked fluid is detected in the pump head. Blue-White's patented TFD

System detects a wide range of conductive chemicals with no false triggering. If the TFD detects tube failure, the pump will automatically shut off and energize a relay switch. This permits communication with external equipment, such as a backup pump or alarm. Condensation and washdown procedures should not cause false triggering.

In conclusion, many abrasive, caustic and viscous fluids are critical to water treatment goals. However, correct dosing of these chemicals does not have to be difficult if the correct chemical feed pump is in use. Operators can effectively administer such chemicals without complication and with minimal downtime.

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Duperon Harvest Rake Helps Jim Hinkle Fish Hatchery Maintain Optimal Conditions for Trout Farming

The Jim Hinkle Spring River State Fish Hatchery near Mammoth Spring, Arkansas, is one of the largest state-owned trout-producing facilities in the southeastern United States. Built in 1974, the hatchery annually produces 650,000 to 800,000 rainbow trout for stocking streams across southern Arkansas. Water for the gravity-fed hatchery comes from the Spring River at a rate of about 70,000 gpm, flowing to the hatchery's 56 tanks, 21 linear raceways, 11 round fiberglass silos and 24 round concrete silos.

CHALLENGE: MAINTAINING DEBRIS-FREE FLOW

Trout require clean, moving water to thrive. Removing debris before river water enters the hatchery is critical to maintain water flow. The freshwater intake at the facility has a high volume of vegetation that can decrease flow, posing a threat to fish survival.

To remove debris, the hatchery was using an aging screening device that required constant maintenance. During heavy rain, cleaning the screens was an all-hands-on-deck event requiring manual debris removal to keep water flowing to the hatchery. In extreme events, the screens would have to be removed, leaving only the inlet bar grate to prevent a debris overload. Afterward, workers in diving equipment had to clean out muck, vegetation and debris for days.

SOLUTION: DUPERON HARVEST RAKE

In 2023, the hatchery replaced the aging manual screens with two Duperon Harvest Rake screens. The Harvest Rakes collect debris upstream from the hatchery and deposit it on a conveyor belt, automatically returning it to the river downstream. This keeps the hatchery debris-free while minimizing impact on the natural flow of the river and dramatically reducing labor requirements.

Designed to manage high volumes of aquatic vegetation, the Harvest Rake is ideal for sites that have side currents, backflow or channel turbulence. The unit can be adjusted for large debris and above-average flow conditions. The installation at Jim Hinkle includes a rear spray bar that ensures the conveyer is always clear and ready to accept debris from the rake.

The Arkansas Game and Fish Commission requires equipment that does not disrupt the wildlife upstream or downstream of the hatchery or expose wildlife to hazardous chemicals. The Duperon Harvest Rake met all environmental requirements.

PROVING ITS WORTH

On July 13, 2023, a major rain event caused a 3-foot rise in the Spring River in just three hours. With the old screens, this would have required calling in at least two workers for all night flood duty to manually remove debris, followed by days spent cleaning the screens to regain optimal flow.

The flood was no match for the Harvest Rake, which easily and reliably removed large amounts of debris from the screens. River water continued flowing safely into the hatchery with no manual intervention.

"With the Harvest Rake, the screening of the river is no longer something I have to worry about," Hatchery Manager B.J. Vandiver says. "I don't worry about it getting clogged up, I don't worry about a large log damaging it, and I don't worry about losing fish during a heavy rain."

No Lower Bearings, Sprockets, Bushings or Guides With Raptor FalconRake Bar Screen

The Lakeside Raptor FalconRake Bar Screen is an efficient, proven, cost-effective screen technology for inorganic solids removal providing protection to downstream equipment in municipal and industrial applications.

High removal efficiency and low headloss is achieved with multiple rakes continuously removing captured material. The Raptor FalconRake Bar Screen features a durable stainless steel chain-link design for solids removal without the need of lower bearings, sprockets, bushings or guides, thus eliminating any fouling or jam conditions in the channel.

The Raptor FalconRake offers a wide range of bar shapes and depths to ensure successful operation regardless of the application, creating an efficient, durable and dependable rapid debris-removal system.

DESIGN AND CONSTRUCTION

Product features include an all stainless steel construction to resist corrosion, and a low-horsepower energy efficient drive system. The unit requires minimal headroom above the operating floor.

The Raptor FalconRake offers bar spacing available from 1/4 inch, and features a variable speed to ensure quality cleaning and a durable cast stainless steel chain-link system.

Customers can optionally add a cover for odor control, an explosion-proof design or weather protection system, or teardrop-shaped bars for reduced headloss.

THE COMPLETE PACKAGE

The Raptor FalconRake Bar Screen can be used in tandem with the Raptor Wash Press to wash, compact and dewater captured screenings. The screen and wash press equipment controls can be integrated into one control panel for smooth and efficient operation.

LOW MAINTENANCE, HIGH PERFORMANCE

The Lakeside Raptor FalconRake Bar Screen operation is simple. As wastewater flows through the screen, solids are captured on the face of the bar screen. Multiple rake heads with teeth that penetrate the bar screen transport solids to the top of the unit where a debris wiper blade removes solids into a discharge chute. Materials then fall from the chute into a conveyor, washer/compactor or dumpster for disposal.

The low-horsepower, energy-efficient drive operates at low or high speed to ensure the most effective capture/solids removal in the wastewater stream. Maintenance, although rarely needed according to the manufacturer, is easily achieved at the operating floor level since no part of the drive system is located below the water surface.

The Raptor FalconRake offers efficient, economical performance for municipal wastewater treatment plants, pump stations, surface water intake structures and combined sewer overflows.

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AquaSBR Replaces 60-Year-Old Treatment Plant in Moab, Utah

Located in southeastern Utah, Moab is a popular resort community that is experiencing a boom in residents and annual visitors. Bordered by the Colorado River and the scenic vistas of the Colorado Plateau, Moab is surrounded by national parks and is a key tourist destination for tens of thousands of travelers from all over the world.

The Moab Water Reclamation Facility was initially constructed in the late 1950s to provide primary treatment of domestic wastewater for the Moab area. However, the plant could no longer keep up with the higher flows and loading due to population growth and rising tourism. In addition, with aging infrastructure and the new permit cycle in sight, upgrades to the biological treatment were necessary to ensure full compliance.

FINDING A SOLUTION

After evaluating several processes, Moab selected the AquaSBR sequencing batch reactor, a true batch system, due to its many process and mechanical capabilities, including the ability to handle varying flows and loads. It also features retrievable equipment, such as diffuser racks, mixers and the decanter from the side of the basin. This allows ease of maintenance without dewatering the basins and taking the system offline.

Economically, the system offered reduced construction and operating costs and provided the lowest cost of ownership over the life of the plant as compared to other treatment processes. The flexibility of the advanced control strategy was also an advantage, which allows for simple modifications to adjust the system to accommodate the loading variations.

In 2018, the city of Moab commissioned the new AquaSBR which was a revolutionary change for the entire region with its ability to treat varying loads and flows while producing exceptional effluent quality — well below permit. Moab WRF Supervisor Greg Fosse says it's the first SBR plant in Utah. "The numbers it's producing have garnered a lot of attention."

The AquaSBR system provides several advantages for plant operators, including on-demand process control and ease of maintenance of retrievable components. Mark Luddington, Moab WRF assistant operator, says that "working at the new plant is much more operator-friendly. Almost everything is automated."

AquaSBR®
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Easily Achieve Nutrient Removal with the Flexibility of a Time-Based, True Batch System

Biological nitrogen and phosphorus removal can be a challenge for wastewater plants as effluent objectives change due to new or future permits. Since the mid-1980s, the **AquaSBR®** sequencing batch reactor has achieved efficient, cost-effective nutrient removal with more than 1,100 installations, worldwide.

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Pair Energy Efficiency With Better Uptime and Reliability for True Efficiency

Efficiency is often used across municipalities and industrial companies throughout the U.S., and rightly so. When it comes to air compressors and blowers, "efficiency" should never be limited to energy efficiency. Of course, it's important to preface that by acknowledging that up to 80% of the life cycle costs of a compressor or blower come from energy usage.

Considering this, and the continued advancement in variable-speed drive technology, the rotary screw compressor is a backbone of the industrial world, and it has evolved into a mainstay of the municipal world, generating even greater energy savings. Ideal for many applications, this technology offers a wide range of volume and pressure bandwidths, yielding ultimate efficiency and flexibility. While a great option, screw technology should not be a default choice without first auditing your facility. That's the main reason Atlas Copco offers seven different technologies available for every unique application.

SERVICE EFFICIENCY

Let's now focus on service efficiency, which encompasses time, money and downtime. Like most machinery, the time between service intervals has increased on many compressors and blowers due to continued improvements in designed components. When choosing your next compressor or blower, this is a critical consideration to calculate your return on investment or total cost of ownership.

Considering handling some service procedures in-house? If so, consider the physical time required, whether some parts need removal, any specialized equipment or tools needed, and the cost of the components. Finally, note that saving a few dollars on non-OEM or guaranteed parts is generally one of the least efficient practices, as it can limit the energy performance of the machine, or lead to failure, which brings us to the last point on efficiency: The cost of downtime.

MORE UPTIME

Every facility manager knows the cost of downtime. Keeping up with service needs when relying on a single machine is challenging. These days, it's possible to build a system that isn't all or nothing. For example, this can be achieved by easily adding a second machine or running two smaller ones in parallel.

Remote monitoring and 24/7 connectivity is offered with many new or retrofitted compressors and blowers. This gives peace of mind to ensure you can always be in control — no matter where you are working from. Your supplier can see exactly the same messages that you are seeing in real time and can guide you in proactive steps. Lastly, you can also think of remote monitoring as an ongoing audit that happens 24/7, offering constant visibility to flag issues before they become serious problems.

To put it simply, efficiency is an all-encompassing topic. Energy efficiency is nothing without the efficiency of uptime and reliability!

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The Barnes family of pump products from Crane Pumps & Systems provides versatility, high performance and great value. For more than a century, municipalities, engineers, plumbing contractors, builders and developers have relied on Barnes wastewater pumps and pressure sewer systems for reliability and durability. From fractional horsepower sump pumps to robust grinder and chopper pumps, Barnes delivers innovative, cost-effective solids-handling pump solutions.

One of the main issues plaguing customers has been and will continue to be the changing waste stream's capability to handle solids. This led to the development of the Barnes SH Non-Clog and SITHE Chopper products. The SITHE chopper features a patented open-center cutter design, field replaceable heat-treated stainless steel blades, and plug-and-play cord, making it the preferred pump of choice in municipal wastewater applications, especially those with clogging issues. Furthermore, Barnes understood the rising demand for a more efficient submersible pump that could attain premium efficient, IE3, motor ratings. Utilizing their proven nonclog and chopper technologies, they introduced the envie3 motor line. These pumps took Barnes' proven nonclog and chopper wet ends and outfitted them with a premium efficient motor that can run in both wet applications and dry pits, as well as in horizontal or vertical configurations. The development of this platform expanded the portfolio and pushed the envelope on one solution solving a variety of needs.

THE RAZOR GRINDER PUMP

For those who don't have a ton of flow or who need a lot of head at their waste station, while still focusing on this clogging issue, Barnes has also launched a new and improved grinder platform. The RAZOR grinder pump is the ideal 2 hp pump for light commercial and residential solids handling applications. With the Razor's thoughtfully designed innovative axial cutting technology, it is engineered to efficiently reduce solids like flushable wipes, diapers and other nonbiodegradable items. This grinder product is especially useful in pressure sewer systems. The Barnes' pressure sewer system with the Razor grinder can reduce installation costs, increase system flexibility and limit the overall environmental impact of the sanitary sewer system. Its flexible capabilities allow it to be a turnkey solution or easily integrated into existing systems.

Barnes' innovation doesn't stop there. Their offering expands to sewage ejectors and sump pumps that are used in smaller applications as well. Designed for long operational life, quiet operation and dependable service, Barnes has your residential needs covered.

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Detect H_2S Early in Water With Hach's GS1440 and GS2440EX Sensors

The reaction of sulfates with anoxic biofilms in wastewater environments creates hydrogen sulfide (H_2S) in the wastewater. As some of that H_2S turns into a gaseous form at the surface of the water, it can fill the headspace in pipes or other structures. The severity of hydrogen-sulfide concerns can be exacerbated by conditions in the water and the surrounding environment. For example, long hydraulic-retention times in force mains, high turbulence, high temperatures, high acidity and high biochemical oxygen demand conditions can all magnify its concentration and impacts.

THE PROBLEMS

Even just a little bit of H_2S can lead to big problems. Its "rotten egg" odor is noticeable at 0.5 ppm and corrosion also starts at 0.5 ppm. But the concentration measured near the top of a manhole can be vastly different than that measured in the wastewater itself. Knowing the worst-case scenario by monitoring H_2S in the wastewater can have tremendous influences on the outcomes of hydrogen sulfide's three greatest challenges:

Worker Safety. As bad as the typical hydrogen-sulfide odor complaints from the public are, news stories about accidental worker deaths in wastewater environments are worse. The better handle that utilities can get on actual hydrogen-sulfide concentrations in the wastewater earlier in the collection system or wastewater treatment plant, the greater their awareness and ability to be effective in taking precautionary steps.

Odor Control. There was a time when wastewater treatment plants and lift stations were situated far from population centers, but as open space in developed areas shrinks due to new construction, so too do the odds of odors going undetected by residents. Accurately measuring hydrogen-sulfide concentrations at their worst in the liquid stream of collection system feeder lines and at plant inlets gives wastewater utilities the opportunity to neutralize them before they cause a public relations nightmare.

Corrosion Control. Discovering damage through visible concrete deterioration is bad enough — a situation where H_2S converted into sulfuric acid by sewer-pipe biofilms eats away at the concrete surface, turns it into flakey gypsum, corrodes its reinforcing steel and weakens the overall structure. Worse yet is undetected crown-rot corrosion in the headspace of an underground collection pipe that can lead to a collapse, damage to adjacent structures and compounded remediation problems.

THE SOLUTION

Hach offers two hydrogen sulfide sensors that can continuously monitor H_2S in the liquid and gas phase, allowing you to optimize the treatment process and proactively control H_2S before it causes issues. Detecting H_2S in the liquid phase enables system operators to identify that compound at its highest concentrations — concentrations not necessarily exposed to the gas-phase sensing environment.

The GS1440 (made for use in nonhazardous locations) and GS2440EX hydrogen sulfide sensors from Hach provide accurate readings in both the liquid phase and the gas phase. Having an accurate picture improves the ability to manage odor, corrosion or other problems with the minimal necessary investment in chemical treatment. That avoids the expense of overdosing and reduces the risk of upsetting delicate downstream biological processes. The same data can even be used to surcharge industrial customers whose sulfide-loaded effluents contribute to costly problems or to convince them to implement pretreatment to reduce the impacts.

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For Reliable Monochloramine Analysis, Oklahoma's Lone Chimney Water Association Relies on the MCX

By the time the HF Scientific MCX Monochloramine Analyzer arrived on the project, the Lone Chimney Water Association was facing its fair share of challenges. The Lone Chimney Water System, in the heart of Pawnee County, Glencoe, Oklahoma, serves five separate rural water districts across seven towns, delivering water to nearly 12,000 residents. It operates with the unique challenge of serving a large network of customers from a remote location.

Though it had been treating water with free chlorine for decades, Lone Chimney found itself continually struggling to reach compliance with EPA Disinfectants and Disinfection Byproducts rules. Though free chlorine is a popular water disinfectant, it's also highly reactive with organic compounds, which can increase the production of chemical byproducts. Lone Chimney determined the best path to resolving its DBP issues would be transitioning to chloramine disinfection. Chloramines, by contrast, are less reactive than free chlorine and have more persistence in water.

At the time of the project bid, HF Scientific had not yet launched its MCX Monochloramine/Total Ammonia/Free Ammonia Analyzer. Limited to purchasing readily available equipment, the engineering team and plant staff chose an in-stock analyzer. It didn't take long for them to question that decision. When it came time to install and start the instrument, C.A. McAllister, a plant operator, recalled it malfunctioning, resulting in reliability issues and chemical spills within the cabinet.

THE RIGHT ANALYZER FOR THE JOB

Chris Schuermann, the systems integrator, was ready to step in and clean up the mess. He knew that HF Scientific — widely regarded for its reliable, easy-to-use instrumentation — had recently launched an innovative monochloramine/total ammonia/free ammonia analyzer: The MCX. HF Scientific had supplied the turbidity and chlorine analyzers the plant already relied on, and the MCX would prove to be equally as robust and dependable. Schuermann understood the inherent and unique challenges that come with being a remotely located plant and that for this project to be successful, Lone Chimney would need an analyzer that could provide reliable, regular data to enable plant staff to maintain low free ammonia levels to minimize nitrification events.

The MCX was ready to deliver. The instrument was designed using proven HF Scientific technology and to operate continuously, unattended, for up to 30 days, all while providing accurate readings in consistent 15- to 20-minute intervals — a crucial feature for Lone Chimney's remote location. The MCX, Schuermann knew, would be the linchpin for this project's success, providing accurate and reliable data to enable the local team to effectively mitigate nitrification events, ensure regulatory compliance and deliver clean, safe drinking water to its residents.

With a concrete plan in place and no margin for error, Schuermann knew they "needed analyzers that were (going to) be rock-solid reliable." The MCX made good on its promise, and the results of the conversion at Lone Chimney Water Association have been transformational. Operations Manager Paul Kinder finally had the right tools to provide the data he needed to control his chloramine disinfection and free ammonia levels. Thanks to the HF Scientific MCX, Kinder says, "We are now in compliance with the DEQ on the disinfection byproducts. We are very pleased with the analyzer we have now."

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Keller's non-fouling level transmitter solves tough measurement problem

In wastewater measurement, accurate readings are essential to ensuring proper pump operation. A failure in this area can result in unhygienic liquid waste overflow and costly repairs to pump mechanisms.

In Newport News, Virginia, several restaurants were built in an area serviced by the same municipal wastewater lift stations. These restaurants introduced heavy grease content to the wastewater and caused the municipality's existing level measurement equipment to foul and fail.

ANTIQUATED SOLUTIONS

Before development of the commercial district, Newport News Waterworks and Hampton Roads Sanitation District relied on a combination of mechanical floats and traditional submersible level transmitters. However, with the restaurants in operation, the increased volume of grease clung to both instruments and, as a result, the primary and redundant level measurement failed to properly transmit level data to the pump controller.

The accumulation of grease to the submersible level transmitter clogged the pressure ports that blocked the free flow of liquid and proper application of hydrostatic pressure to the sensing diaphragm. On the redundant float switch, which should trigger the pump in the event of a failed level transmitter, the accumulation of grease blocked the mechanical operation of the float ball. With the level transmitter and backup system inoperable, the affected lift stations failed, either reading too much wastewater or too little, thus causing the pumps to run continuously or not at all.

IDEAL SOLUTION

Several instrumentation companies offer non-fouling solutions with only minor variations of the existing and unsuitable solutions. These instruments use a Teflon-coated elastomer diaphragm, which is relatively weak and prone to puncture. Their answer is to use a bulky protective cage, consisting of a shield mounted on bolts and standoffs. However, these shields can collect rags, grease and biosolids in the wastewater, which leads to erroneous readings.

Newport News officials contacted Keller America, whose LevelRat provided a unique approach to wastewater level measurement.

The tougher Kynar diaphragm used on the LevelRat provides superior abrasion and puncture resistance relative to other wastewater level transmitter solutions. This design also minimizes the 36 XKY profile, creating a sleeker design without the need for bulky shields. The result is a truly non-fouling instrument that provides superior operation in environments that would clog traditional level transmitters.

The LevelRat is specifically designed for extended service in lift stations, and thanks to guaranteed lightning protection and UL approvals for use in hazardous locations, the instrument is ideal for deployment in most wastewater measurement applications, including those prone to chronic lightning damage. LevelRat is manufactured to order with custom pressure ranges and cable lengths, all in three or fewer business days.

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SOLVOX Oxygen Dissolution Technology Offers Simple Solution for Capacity Increase

Plant operators are challenged to maintain treatment throughput at reasonable cost even when the plant reaches design capacity. This challenge can be compounded by changes to production runs and formulation mixes, often requiring additional investment to maintain stable plant performance. However, extending plant capacity to maintain or increase throughput while handling a new mix is often prohibitively expensive.

Many operators are looking to support variable oxygen demand more cost-effectively and efficiently than traditional aeration techniques, which require energy-intensive air compression equipment. In addition, air only contains about 21% oxygen, making some conventional aeration techniques not particularly efficient as temperature fluctuates or influent load varies.

PURE OXYGEN FOR WWTP UPGRADES

In many cases, gas-enabled wastewater technologies are an effective way to balance conflicting cost, temporary capacity increase and compliance needs. Innovative, gas-based solutions are often a low upfront investment solution to inject new life into existing assets and extend their longevity. Often these technologies are also seen as a flexible way to bridge seasonal peaks in oxygen demand.

The biological treatment of industrial wastewater can be significantly enhanced through a secondary treatment stage with dissolved oxygen. Linde's SOLVOX Mobile oxygen dissolution technology has been optimized for application of pure oxygen, additional process mixing and efficient oxygen transfer performance. The SOLVOX process results in excellent oxygen utilization performance and high transfer rates. Assembly and installation requirements are minimal, with little or no construction work required. SOLVOX mobile is ready to operate within a very short period and can also be installed in fully operational tanks, avoiding the cost and inconvenience associated with process shutdowns and drain downs.

SUITABLE FOR VARIOUS OPERATING CONDITIONS

Linde's extensive range of SOLVOX products are suited to a wide array of wastewater treatment plants with different operating conditions. Regardless of the individual treatment challenges, Linde can enhance existing aeration capabilities by introducing pure oxygen into wastewater activated sludge in a variety of ways. Adding pure oxygen with the SOLVOX process can also increase the performance of an existing plant during peak loads and maintenance of main equipment. Requiring a very low investment, it offers a flexible way for operators to adjust to BOD or COD peaks and production campaign demands.

With its innovative concepts and developing technologies, Linde has a leading role in the global market. Traditionally driven by entrepreneurship, the company is working steadily on new high-quality products and innovative processes. Each concept is tailored specifically to meet its customers' requirements, offering standard as well as customized processes. This applies to all industries and all companies regardless of size, according to a Linde spokesperson.

"If you want to keep pace with tomorrow's competition, you need a partner by your side for whom top quality, process optimization and enhanced productivity are part of daily business," the spokesperson says. "However, we define partnership not merely as being there for you, but being with you. After all, joint activities form the core of commercial success."


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carbon dioxide, as a safe alternative to mineral acids, to lower pH.
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Aeration Crisis: Sulzer's HST Turbo Blowers Fly in to Save the Day

Aeration processes in the wastewater treatment industry are essential in meeting water quality figures, so the blowers need to be reliable and as efficient as possible. For one facility in California, repeated maintenance issues led to the decision to remove the existing turbo blowers and install Sulzer's HST units, which in turn reduced energy consumption for the site.

Equipment reliability is at the forefront of concerns for plant owners, especially when the backup machines are due for retirement as well. In this case, the treatment works had previously invested in two new 400 hp (300 kW) turbo blowers to replace aging diesel-powered units. This decision also supported the site's objectives relating to the local Environmental Protection Agency and air-borne emissions.

COST ASSESSMENTS

After an initial period of trouble-free operation, both frontline blowers experienced reliability issues following their installation 10 years earlier and eventually suffered catastrophic failures, caused by high dust levels in the local area. According to the treatment plant management team, support from the original equipment manufacturer to repair the blowers was going to cost upwards of six figures in U.S. dollars. To add insult to injury, the treatment plant was compelled to run the diesel-powered blowers to maintain the aeration processes.

This could only be a short-term solution due to the increased pollution levels and stringent Californian laws. The local EPA was already threatening possible fines for continued use of the diesel-powered blowers.

Faced with these considerable challenges, the plant management and maintenance teams made the decision to move away from the original supplier and contacted Sulzer to discuss the options and timings for replacement blowers. Sulzer's HST product line has an excellent reputation in Southern California for reliability as well as efficiency, according to company officials.

The management team from the wastewater treatment plant — as they were doing their research and investigating a variety of options — visited another Sulzer installation site in the state that operates six HST units. The operators and management staff at that plant provided further support for the blowers, confirming their low operational costs and continued reliability.

HIGH-SPEED SOLUTION

Having completed a site survey, Sulzer proposed two 250 hp (186 kW) HST30 units. This solution quickly resulted in a purchase order with the additional request of air freight for the units to minimize project timings as much as possible.

Rick Barile, Sulzer's regional sales manager, says "Sulzer's HST30s were able to meet the requirements of the plant's aeration processes. Using 250 hp blowers instead of 400 hp units also resulted in a considerable energy saving for the site."

Sulzer's range of HST turbo blowers feature magnetic bearing technology and a high-speed motor, which provide wear-free operation with low noise levels and high energy efficiency. With a compact footprint, they can be easily installed in existing buildings and connected to the aeration infrastructure. They can be integrated with other blower designs, if necessary, to ensure a smooth transition during an upgrading project.

The HST range can be specified for a variety of different installations and control configurations that ensure the aeration process is optimized both in terms of biological efficiency and energy efficiency. Sulzer's experts can provide customers with design support, detailed specifications and options that will maximize project savings and highlight the return on investment.

For more information about Sulzer's range of turbo blowers and other equipment designed for water treatment plants, contact Sulzer.

SULZER

Sulzer is a global leader in fluid engineering. The company specializes in pumping, agitation, mixing, separation and purification technologies for fluids of all types. Sulzer has been headquartered in Winterthur, Switzerland, since 1834.
www.sulzer.com/en

SULZER

Save energy and the environment

Aeration processes typically consume more than 50% of the energy used in a wastewater treatment plant. We are ready to support your transition from traditional blowers to the most efficient and reliable equipment on the market, the HST turbocompressor. Hundreds of customers are ready to testify to the long-term benefits and share their positive experiences. Contact us to discover how the HST can improve our world. sulzer.com/**hst-turbocompressor**

Vaughan Co. Ensures Fast Lead Times for Reliable Pumps

Vaughan Co. products have been made in the United States since 1960. With four generations of expertise, the company says it's committed to giving its customers outstanding service throughout the country — whether providing unique pump solutions or post-installation support. Every pump user faces a unique situation, and each Vaughan system is configured to the end user's desired specifications.

For federally funded projects, Vaughan's pumps and pumping equipment meet all requirements to receive federal aid under the Build America, Buy America Act. All Vaughan pumps and pumping equipment are produced with materials sourced in the U.S. and are constructed in the company's 140,000-square-foot Washington state-based manufacturing facility. With an extensive $10 million inventory and strong relationships with domestic suppliers and foundries, Vaughan ensures fast lead times, reliable product quality and access to spare parts as needed.

VAUGHAN CHOPPER PUMP

When the going gets tough, you can turn to the Vaughan Chopper Pump, which can handle everything from scum to food processing to silt ponds.

This centrifugal pump has the unique ability to chop all incoming solids prior to pumping. Not only does this protect the pump from clogging, but it also benefits downstream components, processes and the environment. All wear components are cast steel and heat treated for maximum impact and wear resistance. These heavy-duty patented components are engineered together to create the ultimate pump for handling severe solids.

VAUGHAN ROTAMIX SYSTEM

The Vaughan Rotamix System is a cost-effective means of mechanical hydraulic mixing for sludge tanks, digesters and other high-volume applications.

Combining high-velocity mixing nozzles and the Vaughan Chopper Pump, the Rotamix creates a multizone mixing pattern while simultaneously chopping all accumulated solids. This produces an easy-to-pump, homogeneous mix that eliminates floating mats or solids settled at the bottom of your tank.

With guaranteed performance and a 10-year full nozzle warranty, the Rotamix System aims to keep your operations running smoothly.

VAUGHAN CONDITIONING PUMP

The Vaughan Conditioning Pump is here to save you from costly cleanout cycles and maintenance. This submersible chopper pump is mounted on a portable stand and fitted with a high-velocity mixing nozzle. The Conditioning Pump recirculates the contents of the wet well, chopping and mixing to produce a homogeneous mixture that is more easily pumped out. As the pump is mounted on a portable stand, it can easily be used in multiple applications at a single job site, facility or municipality.

From reducing vacuum truck visits to removing floating grease and debris in your lift station, the Vaughan Conditioning Pump is your portable solution for next-level sludge and grit mixing.

Vaughan
Unmatched Reliability

Vaughan Co. is a pumping and mixing equipment manufacturer located in Montesano, Washington, that provides products for both domestic and international businesses and municipalities. Vaughan focuses on producing quality pumps and mixers for tough applications within the municipal, industrial and agricultural markets. This focus on quality means the company takes time on each project to ensure that the pumps and/or mixers are properly sized for each installation.

888-249-CHOP (888-249-2467) | info@chopperpumps.com
chopperpumps.com

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Vaughan
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Chopper

When the going gets tough, turn to the toughest pump on the planet. Since 1960, the unrivaled Vaughan Chopper Pump has been on the cutting edge. This original chopper pump was built first and made to last in any application, including:

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Enclosed Gravity Belt Thickener Increases Performance and Containment at WWTP

The Glens Falls WWTP was previously using a dissolved air flotation thickener to thicken the waste activated sludge at its plant. The DAF thickener provided only limited odor containment, was energy intensive and had been showing its age with increased maintenance costs. The plant decided to start looking at new technologies to meet its thickening needs. It ultimately decided on an Enclosed Gravity Belt Thickener from BDP Industries.

EXCELLENT PERFORMANCE

The EGBT is totally enclosed from the top to the bottom. The top of the machine features stainless steel hoods with clear Lexan sliding windows that are easily removed without any tools. The hoods allow operators a clear view of the process, for quick and easy optimization of the machine. The bottom of the machine features a plate frame and bottom filtrate pan that ensures all process materials are contained in the unit. The filtrate lines are all piped directly into the floor drain.

This thickener provides significant solids containment while also providing excellent performance. The EGBT at the Glens Falls plant produces TWAS at 6-7% solids with minimal energy and polymer usage. The EGBT also includes an automatic plow lift feature and an automatic washdown system.

The EGBT is able to perform its own washdown, without the need of an operator or a water hose. The automatic plow lift raises each plow to clean off any solids that might have collected on them. The plow lift is then lowered back to the operating position. The self-cleaning showers can be programmed to turn on and off at certain times. The showers can also be programmed to turn on when the plow lifts are raised to completely clean all components.

BDP Industries is a leading supplier of dewatering, thickening and composting equipment with thousands of installations worldwide. Products include belt presses, screw presses, gravity belt and rotary drum thickeners, and in-vessel composting systems. All products are custom designed and manufactured in the United States.
518-695-6851 | info@bdpindustries.com | www.bdpindustries.com

AERZEN's Delta Hybrid 2.0 Combines Blower and Compressor Technology

It's one of the most innovative solutions in compressor technology, according to AERZEN. The AERZEN Delta Hybrid 2.0 is the only assembly in the world to date that combines the advantages of blower and compressor technology in one system, says a company spokesperson. It offers new possibilities in positive pressure generation, along with savings of up to 30% compared to conventional blowers.

Around 90% of the life cycle costs of a blower are energy costs — a number that becomes a challenge. AERZEN meets this challenge like this: Up to 30% energy saving compared to conventional lobe blowers with a return on investment that can be achieved after a few months, depending on volume flow and pressure. That is what the Delta Hybrid represents. Delta Hybrid operates in a wide range of key industrial wastewater and pneumatic conveying applications. The machines are designed for the oil-free conveyance of air for positive pressure applications.

The advantages of AERZEN Delta Hybrid 2.0 at a glance include high energy efficiency; reduced life cycle costs; a belt drive for a mix of efficiency, precise design, flexibility and maintenance; high reliability and durability under extreme conditions; large volume flow control range; and reduced maintenance.

Reduce Sludge Cake by 60% Without Thermal Drying

Facing ever-increasing disposal costs, many plant operators seek ways to further reduce their dewatered sludge cake. But equipment like thermal dryers can be costly and inefficient. What other option do operators have?

THE ELECTRO-OSMOSIS DEHYDRATOR

The Electro-Osmosis Dehydrator (ELODE) might be the best option for a lot of plants. In just three minutes, ELODE dehydrates and reduces cake weight by more than 60%. It's a compact machine that complements and easily retrofits in line with existing mechanical dewatering equipment like presses (belt, screw, etc.) and centrifuges.

"Imagine reducing your sludge disposal costs while improving your sludge cake's landfill acceptance because of its new weight, volume, dryness and compressibility," an ELODE spokesperson says. "One way is to purchase a costly thermal dryer and boil all the water away using a lot of heat, but a better method could be to use this new dehydrator."

ELODE can efficiently reduce cake weight at a lower expense and equipment cost, without using any additional chemicals, polymers, heat or mechanical force.

NO HEAT ENERGY

This dryer does not use thermal heat energy to pull water away from your sludge cake. Instead, it leverages electrical polarity differences in sludge cake to essentially "shock" and separate the water from the solids. It is so efficient that the sludge cake never gets too hot to touch, according to the spokesperson.

With over 100 tests completed, the company confirms that ELODE works with 95% of municipal wastewater treatment plant sludge cakes.

"Discover all the benefits of ELODE, turning out 15% dry solids cake to 40%, or your 20% dry solids cake to 45% almost instantly," says the spokesperson. "Ask to see how much your sludge cake could be reduced. It could be far easier than you might think."

ELODE USA sells sludge drying equipment and is known for its electro-osmosis dehydrator. Compared to traditional dryers that heat sludge to evaporate its water contents, ELODE uses electro osmosis to shock the sludge to separate water from solids for a more energy-efficient process.
201-568-7778 | alexm@elodeusa.com

Keep Your Project Running With Franklin Electric's Vertical Line-Shaft Turbines and Submersible Turbines

From a deep-set vertical line-shaft turbine that delivers 2,500 feet of head to turbines moving 40,000 gpm, discover Franklin Electric's selection of in-stock components and engineered solutions to help you tackle your next pumping challenge. The company offers a wide selection of strapped, cast iron and cast stainless submersible turbines, along with an extensive offering of vertical line-shaft turbines that help you cover almost any pumping application.

Franklin Electric's enhanced machining, focused assembly capabilities and dedicated inventory levels allow the company to fabricate custom pumping solutions to fit the performance requirements of the most demanding applications. Every component you order is backed by its proven manufacturing standards and network of industry experts who help you select and configure the right turbine for the job.

MOVING MUNICIPAL WATER

Franklin Electric's FVT Series of vertical line-shaft turbines is a critical tool for moving water in municipal applications. The FVT Series offers flows up to 35,000 gpm in size ranges 6 to 42 inches and is classified to meet NSF/ANSI/CAN 61 standards for drinking water applications. The product is manufactured at a recently expanded facility that produces large-scale turbines up to 42 inches in length and features enhanced machining and fabrication equipment, assembly capabilities and dedicated inventory levels.

Franklin Electric also offers customers the ability to quickly customize and select the best product solution for their application via its proprietary online tool, FE Select. The tool prompts users to input performance requirements and recommends the best vertical line-shaft or submersible turbine-based on those needs. It also provides downloadable assets, including performance curves, dimensional drawings and detailed specifications of components.

How Do You Protect Your Lone Workers?

Do you have a written policy identifying job positions classified as lone workers? Do you have workers with known medical conditions or other special-risk conditions?

An effective lone worker device is a worn personal safety monitor designed to sense a lack of motion, detect a fall from heights, and provide the worker with a means to manually initiate a panic alarm to call for help.

Common methods of lone-worker safety monitoring are manual check-in systems. A manual check-in system makes it someone's responsibility to check-in with a worker — a risky method.

A lot can happen during the time between an expected check-in, creating the risk of someone checking-out when no one is expecting the check-in, which is a dangerous practice, according to Grace Industries, an expert in the life safety field.

Grace Immediate Notification Monitoring Systems immediately identify and locate a worker in distress and quickly notify your assigned monitoring attendant or supervisor. Grace systems integrate with SCADA and gas-detection systems with inputs and relay outputs to control external devices.

In addition to Grace's traditional nonsubscription systems (graceloneworker.com), Grace now offers a new subscription-based IP internet, cellular and satellite remote monitoring service at graceconnectedsafety.com.

Grace Industries was founded in 1974 when it designed one of the first solid-state hydrocarbon gas detectors. This product line spurred the growth of the company which led to many other safety related areas.
graceindustries.com

Reliability, Ease of Operation, Define Komline-Sanderson's Product Line

Since 1946, Komline-Sanderson has supplied reliable equipment solutions that are easy to maintain and exceed expectations.

- The K-S Kompress Belt Filter Press is ruggedly designed and used for dewatering municipal biosolids and industrial sludge. It is easy to maintain and exceeds production goals.
- The K-S Biosolids Drying System operates with full integration of all components. The company has successfully installed systems for more than 20 years, which illustrates the equipment's durability and the company's commitment to supporting customers over the long haul.
- The K-S Gravabelt gravity belt thickener is available for very small to extremely large flows and includes Roto-Kone performance enhancing technology. With several models available, the unit can meet specific requirements and exceed performance expectations.
- K-S Plunger Pumps continue to perform after 40 years of operation. These rugged pumps are the workhorse of the industry.

K-S employs highly skilled and technical field service engineers who know the equipment and listen to and respond to customer needs and concerns, which results in installations that perform well. The company provides factory-made original equipment parts and filter fabrics for belt filter presses, gravity belt thickeners and more, and it works with customers to ensure that equipment exceeds expectations.

The company's experience ranges from simple one-machine installations to complex multistep processes and systems. Reliability, ease of operation, rugged design, proven performance and superior customer service are hallmarks of Komline-Sanderson installations.

Komline-Sanderson

Since its incorporation in 1946, **Komline-Sanderson** has provided quality equipment for process/production filtration, drying, wastewater treatment, sludge processing and pollution control.

800-225-5457 | info@komline.com | www.komline.com

Dual Point Control: Howden's Answer to Variable Aeration Needs

Howden is a world-leading turbomachinery manufacturer with over 300 years' of combined experience across its legacy brands of TURBLEX, HV-TURBO, Spencer and Donkin. Howden products are designed to achieve maximum efficiency and long reliable operational life through the company's focus on engineering excellence.

Howden now introduces its high-speed centrifugal compressor with permanent magnetic bearing motor and Dual Point Control with a control system that adjusts the VDV continuously in order to optimize the conversion from velocity (dynamic pressure) to useful pressure (static pressure).

The aeration requirement is similar to the variation of the daily water cycle. The need for oxygen given by the compressed air needs to adapt to the level of effluent water coming in. Dual Point Control enables a turn down from 100% to 35%. Most other high-speed compressors on the market using single point control are limited to overdesign or a turn down to 60% maximum. The turn down from 100% to 35% enables a wider area of efficiency and turn down running at design pressure. This means higher efficiency from 100% to 60% and no wasted air from 60% to 35% turn down giving further savings on energy usage.

The Howden high-speed compressor utilizes the legacy Turblex centrifugal compressor with over 1,600 blowers in more than 500 installations in the U.S. alone.

Howden Turbo is a complete blower package in a single enclosure with plug-and-play concept. The unit can be placed as a stand-alone unit in a new site or also be ducted into an existing filtration system. All Howden Turbo blowers are fully equipped with Howden Uptime and provide an invaluable insight into the performance of the equipment, offering blower and plant optimization opportunities.

Howden

Howden provides the mission critical solutions that its customers' vital processes depend on. The company helps its customers to increase their environmental and operational efficiencies and to decarbonize their operations.
www.howden.com

Use Life Cycle Cost Calculation to Select Dewatering Equipment

When selecting a piece of mechanical dewatering equipment, it is important to consider the life cycle cost. This includes initial capital cost, square footage utilized, maintenance cost, operating cost and residual value.

The Rotary Fan Press is a dewatering device with patented screen technology that uses simple pressure differential and friction resistance to provide superior dewatering performance at a lower cost and prolonged service life. The totally enclosed dewatering process has slow operation speeds of under 2 rpm, minimal wear parts, and produces high cake solids and excellent filtrate, according to Prime Solution's customers.

Low operational costs — including minimal maintenance, wear parts and manpower — and low energy and water use provide savings year over year. Models are available in multiple sizes ranging up to 400 gpm hydraulically, in a small footprint, and most models have the ability to accommodate additional channels for future increased throughput requirements.

The Rotary Fan Press provides good value when considering life cycle cost. Prime Solution's technical team is a high-quality resource for companies that look for a partner for the life of their equipment.

Prime Solution has designed, manufactured and serviced superior dewatering equipment in the U.S. for more than 30 years. The company's Rotary Fan Press technology is designed and built in the United States.
269-694-6666 | psirotary.com

Bright Technologies Can Handle Your Next Wastewater Challenge

Bright Technologies stands out as an industry leader, providing recycling equipment and dewatering systems tailored to diverse wastewater challenges.

When a liquid waste hauler's processing facility was overwhelmed with growing demands, Bright Technologies intervened with a custom-engineered dewatering package that seamlessly integrated into their infrastructure, dramatically increasing throughput and efficiency.

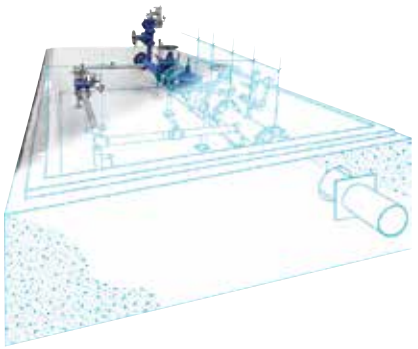
For smaller communities, like a village in Michigan with an outdated wastewater treatment design, Bright came to the rescue with a monthly onsite contract dewatering service. This not only streamlined the plant's operations, but also eliminated the need for heavy capital investments, reducing both operational headaches and costs.

Another testament to Bright's expertise was evident when a Michigan village faced potential noncompliant discharges from a lagoon that hadn't been cleaned in 35 years. Bright's strategic dewatering approach ensured a comprehensive cleanup within a month, impressively staying under budget and saving the village over $50,000.

Bright Technologies, a division of Sebright Products Inc., manufactures high-quality recycling equipment as well as equipment for dewatering and solidification of wet materials. The company also offers integrated recycling and solid waste-disposal solutions through Sebright Products including hydraulic compactors, cart dumpers and custom waste carts.

800-253-0532 | www.sebrightproducts.com

Cla-Val Announces New Engineered Piping Systems



Cla-Val now offers complete start to finish engineered piping systems. These can be as simple as a short spool attached to a new control valve or a complete piping layout for an existing valve station — or even a brand-new valve station including the concrete chamber, hatch and ladder.

The company's Engineered Piping Systems provide:

- Custom/engineered solutions
- A controlled-environment factory assembly
- Capital savings compared to on-site fabrication
- Premium grade products

For more information, visit www.cla-val.com/waterworks/engineered-piping-systems.

Cla-Val has been known as a leading manufacturer of automatic control valves since 1936 and has built a well earned reputation for providing superior quality products designed for mission-critical water distribution solutions throughout the United States and around the world.

800-942-6326 | www.cla-val.com

DELCORA Selects The BEAST Screening System for FOG Receiving Station

Since 1973, The Western Regional Treatment Plant of the Delaware County Regional Water Quality Control Authority has served as a regional leader in both domestic and industrial wastewater treatment. The plant and collection system handle over 35 mgd of wastewater.

DELCORA also operates a truck waste receiving program which takes in a high volume of fats, oils, and grease, and accepts and treats food processing waste, domestic septic, leachate, and industrial and municipal sludges. The ability to blend FOG waste with the other sludges has created a richer fuel for the incinerators and will ultimately result in lower fuel costs.

The original receiving station had cylindrical bar-type screens which were ineffective in screening FOG waste and handling high rate unloading. In August 2017, the authority decided to upgrade the receiving station with a more effective screening system that could shorten truck unloading times, increase debris capture, avoid clogging of the pumps and reduce maintenance requirements.

COST REDUCTIONS

In December 2017 and after extensive pilot testing, DELCORA ordered two FOG BEAST 1400 screening systems from SAVECO (formerly Enviro-Care). Installation and startup were completed in February 2019. In the first

nine months of operation, DELCORA noticed a dramatic reduction in maintenance costs as a direct result of removing inorganic material from the truck waste before that material entered the plant.

The DELCORA facility is well on its way toward meeting its goals of:

- Leading the industry in environmental compliance;
- Reducing truck turnaround time for its customers;
- Reducing maintenance costs; and
- Increasing the competitiveness of their receiving program.

Customizable VF-100 Volumetric Feeder Offers Wide Range of Options

The Eagle Microsystems VF-100 Volumetric Dry Chemical Feeder is constructed of 304 stainless steel and utilizes a rugged direct-drive to ensure optimum performance and durability in harsh chemical-feed environments like those found in water and wastewater treatment plants.

The VF-100 can be optimized for almost any dry feed application and offers options like dust collectors, wetting cones, dissolving tanks, remote operation control, extension hoppers and a wide range of feed rates.

The VF-100 can also be set up as a gravimetric feeder with the addition of a high precision scale. With no external gears, pulleys, chains, belts or lubricants required, the VF-100 is user-friendly and low maintenance. The Eagle Microsystems VF-100 is rugged, reliable and completely customizable to fit any process need, according to the manufacturer.

Eagle Microsystems has been an active industrial weighing specialist for nearly half a century. The company designs, engineers and manufactures all of its products to rigid quality standards for a broad range of applications.
610-323-2250 | eaglemicrosystems.com

Eurus Blower Introduces New Screw Blower Product

Eurus Blower — a wholly owned subsidiary of Shandong Zhangqiu Blower Co. Ltd., which is one of the world's largest suppliers of rotary lobe blowers — is announcing the introduction of the ISB Series of screw blowers to the North American market. These blowers are used in pneumatic conveying and wastewater treatment applications.

The ISB Series offers seven models in low-, medium- and high-pressure versions. The product performance ranges from 417 cfm at15 psig to 5,645 cfm at 36psig (2.5 bar).

Roger Blanton, general manager and marketing director of Eurus Blower says the ISB series offers customers a greater selection of high efficiency blowers. "The ISB product introduction complements recent VR Series (steam blower) introduction and growing success with our multistage centrifugal product. Building on our parent company's high-quality products, Eurus Blower's focus on superior customer service continues to meet customer needs in the North American market."

Eurus Blower was established in 2008 by Shandong Zhangqiu Blower Co., which had more than 40 years' blower manufacturing experience. Eurus Blower was established in the U.S. with a vision of providing competitively priced, high-quality blowers for new or replacement blower applications to North and South American wastewater treatment and industrial marketplaces.
918-361-0285 | sales@eurusblower.com | www.eurusblower.com

SealRyt Bearing System Keeps Conveyor in Operation Long-Term

A wastewater treatment plant in Florida was replacing conveyor screw ball-bearings much more rapidly than the OEM scheduled service interval, and at great expense in downtime and maintenance labor. The conveyor uses a 4-inch shaft that drives the conveyor screw. Sludge would penetrate the pressurized grease-sealed ball-bearing cases and accelerate the wear, eventually resulting in a complete failure approximately nine months from the last rebuild.

THE SOLUTION

SealRyt designed a PackRyt bearing from polymer composite material, along with a reconfigured housing that utilized a pressurized air flush system. The PackRyt BLR (bearing with integrated lantern ring) is designed with close clearances to eliminate shaft movement, allowing it to seal effectively. Once the shaft has been stabilized, the air flush system creates a pressure differential that keeps sludge from entering between the BLR bearing and sleeve, eliminating excessive wear. The design also eliminates any internal moving parts.

THE RESULT

The PackRyt BLR was installed over 10 years ago (in September 2012) and continues to run today without replacement or adjustment.

SEALRYT CORPORATION

The SealRyt Corp. was founded in 2001 to develop, patent and manufacture alternative sealing devices. The company's personnel have substantial experience in the fluid and gas sealing industry — some over 30 years.
413-564-5202 | www.sealryt.com

plant PROFICIENCIES

Maximize the Safety of Chlorination Systems With Halogen Eclipse and Chlor-Scale

To protect your chlorination system from a dangerous leak, the Halogen Eclipse emergency valve shut-off system instantly closes the container valve when a signal is received from a leak detector, panic button or from SCADA. During an emergency shutdown event, the Eclipse system measures the actual torque applied to the valve to ensure the valve is closed to Chlorine Institute recommended standards and provides remote confirmation that the emergency close operation successfully closed the valve.

Operators can maximize the safety of a chlorine disinfection system by using a ton container scale and an emergency valve shut-off system. The Chlor-Scale ton container scale from Force Flow safely cradles a chlorine ton container while providing critical feed and chemical inventory information, allowing operators to know in real-time exactly how much chlorine has been fed and how much remains in the tank. The Chlor-Scale allows you to warn of excessive or insufficient feed rates and remotely monitor from your PLC or SCADA system.

FORCE FLOW

Force Flow is a leading manufacturer of chemical monitoring and control systems for chlorine, sodium hypochlorite, fluoride, polymer and all other chemicals used in water and wastewater treatment. The company offers weigh scales for cylinders, ton containers, drums, day tanks, and bulk storage tanks, and allows users to monitor level, usage and feed rate.

925-686-6700 | info@forceflow.com | forceflowscales.com
halogenvalve.com

GRAPHALLOY Bearings Transform Wastewater Treatment Plant Maintenance

GRAPHALLOY bearings in pillow block and flange block housings are a maintenance-free solution for wastewater treatment plants. GRAPHALLOY bearings are self-lubricating, nongalling, and dimensionally stable, meaning they can operate for years in tough wastewater applications.

GRAPHALLOY is a graphite-metal alloy. As such, it will not swell when submerged or lose lubrication like other bearing materials. GRAPHALLOY bearings are both reliable and low friction. Available in standard-size pillow blocks and flange blocks, the bearings are easily installed in such wastewater applications as flocculators, clarifiers, aerators and more.

In one example, GRAPHALLOY bearings in pillow blocks were installed in the Rotating Biological Contractor systems at a wastewater treatment plant. The bearings were on either end of each shaft. One system was always running. Over 20 years later, the bearings were pulled and replaced with new GRAPHALLOY bearings, though the original bearings were found to still be functional, after all those years of tough service.

GRAPHALLOY®

The Graphite Metallizing Corp., makers of the GRAPHALLOY bearing material, was founded in 1913 in Yonkers, New York. Over the years, the company continually innovated around the product to create more products and grades, including FDA-acceptable grades and NSF-certified grades.

914-968-8400 | sales@graphalloy.com | www.graphalloy.com

Wedeco's DURON UV System Portfolio Has a Wide Range of Applications

Wedeco can support your facility's evolving disinfection needs with its DURON portfolio. The in-channel Duron UV System is engineered and manufactured by Wedeco – a Xylem Brand.

It is designed to meet a broad range of needs, from retrofitting existing facilities to addressing the needs of greenfield sites. It can be installed in systems ranging from the largest wastewater treatment facilities to the smaller single-channel UV disinfection applications.

SERVICEABLE LAYOUT

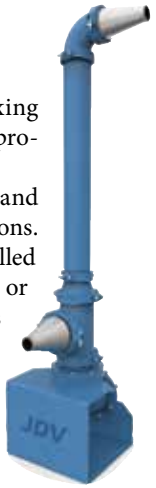
The third-party-validated Duron provides the facility operations with an easily serviceable layout. The remotely monitored system automatically switches banks and channels, and manages the dimming for lamp control. This results in an energy efficient disinfection system with a long life cycle. Use the contact information below to talk to Wedeco about how it can help support your disinfection needs.

WEDECO
a xylem brand

Wedeco is a brand of Xylem US that offers a range of products for UV disinfection and ozone oxidation of water and wastewater. Learn more about its products, applications and services for various industries and water quality challenges.

704-409-9700 | wedeco.com

Nozzle mix system increases efficiency with dual-zone mixing



The JDV Nozzle Mix System is a patented dual-zone mixing technology that provides uniform mixing patterns to produce even distribution and a stable environment.

The JDV Nozzle Mix System optimizes solids suspension and contact, which increases efficiency in a wide range of applications. The system is designed for easy maintenance, with pumps installed outside the tanks. The pumps are typically chopper pumps, or pumps with inline grinders, which prevent fibrous materials from accumulating and causing plugging problems. Various pumps can be used, depending on application. The high-velocity nozzles are mounted inside the tank and are positioned to discharge in a flow pattern that completely mixes the tank contents.

The mix system can be used for anaerobic digestion, biosolids storage, blending tanks, excess flow tanks, septage or leachate, anoxic zones, CSO handling, aerobic digestion, assisting secondary treatment and biosolids holding ponds.

JDV Equipment Corporation is a leading manufacturer and provider of safe, environmentally friendly processing equipment and services for water treatment, wastewater treatment, industrial and agricultural applications. The company has more than 50 years of experience and has completed more than 10,000 equipment installations.

973-366-6556 | sales@jdvequipment.com | www.jdvequipment.com

Optimize Water and Wastewater Treatment With JMS Mega-SETTLERs

Designed and fabricated in the USA with 100% stainless steel, the JMS Mega-SETTLER (plate settler system) is the culmination of decades of experience and field data. JMS Mega-SETTLERs are certified to NSF/ANSI 61 standards and adhere to all BABA and AIS requirements.

It's a strong plate settler, allowing operators to safely walk on top of plates for cleaning/servicing. A JMS-patented Top Flow Control Angle provides even laminar flow and eliminates clogging. The 2VNP adjustable V-notch weirs fine-tune water elevations to accommodate fluctuations in flow. Dual side-loaded effluent troughs allow high visibility and access to plates, and optional plate settler covers are offered for algae control. It's effective for both water and wastewater treatment.

JMS Mega-SETTLERs not only optimize water treatment effectiveness, but also reduce the sedimentation basin's footprint by 50-90%, resulting in more efficient space utilization, and lower capital and operational expenses, according to JMS.

JMS is a leading manufacturer of high rate clarification, flocculation, sludge removal and flow control equipment, as well as biosolids storage and conveyance equipment and low profile cascade aerators. Established in 1962, JMS is a third-generation family-owned/operated company.

704-554-8397 | sales@jmsequipment.com | jmsequipment.com

Alyza IQ Analyzers for Ammonium and Orthophosphate Monitoring

YSI's Alyza IQ is an online wet chemistry analyzer platform with analyzers for orthophosphate and ammonium measurements that include built-in sample delivery systems. Available in single- or dual-channel versions, Alyza IQ is designed to reduce analyzer maintenance while maximizing accuracy and reliability.

Alyza IQ features automatic cleaning and calibrations, no-spill reagent containers, and uses only 5-15 microliters of reagent per measurement, resulting in fewer reagent changes over time. The analyzer platform has a fully automated temperature control system with a double-insulated cabinet to maximize performance regardless of whether it's deployed indoors or outdoors.

ABILITY TO NETWORK

With Alyza IQ, your analyzer is fully integrated into YSI's IQ SensorNet continuous online water quality monitoring system, which provides a full suite of sensors for process monitoring and control. This gives operators the option to either run it as a stand-alone analyzer or tie it into a network with up to 20 additional sensors. Measuring ammonium and orthophosphate with the Alyza IQ connected to a network of other water quality sensors for monitoring parameters like total suspended solids, dissolved oxygen, nitrate and COD, for example, can provide valuable real-time input for control of biological and chemical nutrient-removal processes, improve efficiency of aeration and mixing, and optimize chemical usage.

Alyza IQ NH4 continuously measures ammonium and can be used for measurements at relatively low concentrations with high accuracy. These analyzers are helpful tools to optimize ammonia-based aeration control strategies in wastewater treatment or for effluent monitoring to ensure compliance.

Alyza IQ PO4 continuously measures orthophosphate at low concentrations down to 0.02mg/L PO4-P and uses only 5 microliters of reagent per measurement, allowing for reagent changes about every six months at common measuring intervals. This analyzer is designed for rugged applications like monitoring wastewater for control of chemical phosphorus removal and monitoring of biological phosphorus removal processes. In drinking water, Alyza IQ is suitable for monitoring or control of phosphate dosing to prevent corrosion in metal pipes.

YSI
a xylem brand

YSI is part of Xylem Analytics and a leading provider of water measurement solutions. Xylem Analytics is part of Xylem Inc., a global company focused on solving the world's most challenging and fundamental water issues.

937-767-7241 | info@ysi.com | ysi.com

KUHN Knight SLC 100 Series Spreaders Provide Fast, Efficient Spreading

The KUHN Knight SLC 100 Series Pro-Twin Slinger commercial manure spreaders set the standard for fast, efficient spreading. They provide a suitable combination of efficiency, versatility and rugged durability to maximize value.

SLINGER DESIGN

The unique twin-auger design and heavy-duty body construction allow the Slinger to handle a wide variety of wet and dry materials. A fully adjustable discharge allows faster unloading and improved material breakup for more consistent, accurate spreading.

An aggressive hammer design provides more wear surface on the bottom edge to extend hammer life. The heavy-duty drive requires minimal maintenance and provides years of reliable service.

The SLC series manure spreaders are available in 2,600- to 5,000-gallon trailer and 3,200- to 4,100-gallon truck capacities, and truck and trailer configurations.

Kuhn North America is a leading innovator in the field of agricultural and industrial equipment, specializing in spreaders, mixers, hay and tillage tools. KUHN products are sold through farm equipment dealers throughout the U.S., Canada and many other countries.

608-897-2131 | www.kuhn.com

Transform Screenings and Grit Handling With Longopac Fill

The Paxxo Longopac Fill system is an ideal solution for the containment of screenings and grit at the headworks of wastewater treatment plants. It is economical, easy to install and reduces odor and mess. Paxxo offers design and fabrication services of custom transitions for attaching to complex discharges.

The Longopac Fill continuous-bagging system is ideal for odor, mess and spillage control associated with the collection and handling of screenings, grit and sludge in wastewater treatment plants. It consists of a closed bag system which can easily be connected to the discharge point of existing equipment. The screenings or grit is deposited into the easily sealed continuous Longopac bag and the material and odors are trapped inside.

PAXXO — bag it right

Paxxo is a family-owned company that was founded in Sweden 1980. Its business mission is to develop and produce a sustainable bagging system — Longopac. The Paxxo Longopac system enables smarter waste-handling and innovative packaging applications.

770-502-0055 | order@paxxo.se | paxxo.se/us

Landia Chopper Pumps Designed With Cutting System at Pump Inlet

Inventors of the Chopper Pump back in 1950, Landia is firmly established in North America, continuing to grow year-on-year as word spreads about the effectiveness and reliability of its products — backed by a company that goes the extra mile to find the best possible solution.

Established in 1933, Landia's pumps and mixers provide long-term service for numerous applications, including sludge, aeration, eliminating FOG in lift stations and biogas — as well as working with the dairy, food, agriculture and fish processing industries.

"Landia doesn't try to find an off-the-shelf pump or mixer that is roughly the closest match to solve your problem," says a company spokesperson. "We dig deep to work with you on finding and then fine-tuning the right product with the right set up to match your specific needs, whether its reducing troublesome odors at a wastewater treatment plant, increasing methane production in biogas plants, dealing with byproducts from food production, or dealing with troublesome dry matter in biomasses."

Landia's equipment has proven its durability. The company supplied the first mixers for sewage treatment plants in the late 1980s. Many of these have passed the age of 25 — some even 30 — and are still in operation today.

It was Landia's founder Christian Oelgaard who invented the Chopper Pump over 70 years ago. Unlike later chopper pumps, the Landia Chopper Pump is uniquely designed with a cutting system at the pump inlet to prevent clogging. It does not use the impeller as part of the chopping action. This significantly reduces wear, maintenance and replacement budgets for the best possible total cost of ownership.

Landia **Landia** supplies pumping and mixing solutions to many different industries, including wastewater, agriculture, biogas plants and the fish industry.

919-466-0603 | info@landiainc.com | landiainc.com

The Saco River Drinking Water Resource Center replaced a water treatment plant built in 1884.

Sustainable From the Start

COMMUNITY INVOLVEMENT AND ENVIRONMENTAL SENSITIVITY DROVE PLANNING AND CONSTRUCTION OF SACO RIVER DRINKING WATER RESOURCE CENTER

By Steve Lund

When Maine Water Co. replaced its old Biddeford Water Treatment Plant there was no doubt there would be improvements in sustainability.

The old plant dated back to 1884 and was in the flood plain of the Saco River. It had flooded several times. The new treatment plant made so many improvements that it won an Envision Silver Award from the Institute for Sustainable Infrastructure. The facility was named the Saco River Drinking Water Resource Center to reflect its bigger role in the community.

"It incorporates modern-day safety for the team members, but it also creates space to bring different stakeholders and community members in to learn about all the work of providing drinking water and fire protection," says Michael Cummons, vice president of Maine Water.

The new plant is designed to produce 12 mgd. Average production is about 4 mgd, with a peak demand of 9 mgd. The plant serves some 40,000 people in the cities of Biddeford and Saco, the town of Old Orchard Beach, and part of the town of Scarborough. Maine Water, a private utility company, owns and operates 12 water systems and contracts to operate water systems.

A NOD TO HISTORY

The lobby of the Saco River Drinking Water Resource Center contains several references to the plant it replaces. "We took the large brass compass that sat in the filter gallery of the old plant and relocated it into our lobby, so we can show a piece of where we came from," Cummons says. "We also have photos that show the old facility and the history behind that."

A storyboard in the lobby of the Saco River Drinking Water Resource Center helps explain the treatment process. The compass on the floor is from the old treatment plant.

In the new treatment process, clarified water exits plate settlers (JMS) and heads toward mixed-media filters. The upflow settlers provide the same results as a traditional settling basin in a much smaller footprint.

The lobby also includes a storyboard that includes an overview of the water treatment process, some history of the site, old photos and pictures of current team members.

"We have an internal communications team who worked with engineering and the operations team to put the storyboard together, and we worked with a local sign company," Cummons says. "It's a nice way to show people who we are. We also partnered with some fire departments, brought in some old firefighting equipment, and placed that in the lobby as well, because fire protection is a key component to what we do."

COMMUNITY INVOLVEMENT

The plant is designed to accommodate visitors all the way through the process. When Maine Water hosts school or community tours, people can walk through the plant. Cummons says, "The facility allows us to safely walk through each step of the process. We very much had that in mind — educating the community about where drinking water comes from."

Since it bought the Biddeford-Saco Water Company in 2012, Maine Water has made major investments, including adding a new storage tank and a new booster pump station and replacing several miles of water mains. The investments totaled about $100 million, including about $60 million for the new water plant.

A community advisory committee of city managers, city council members, fire chiefs and other local leaders met several times to discuss the developments in the water system and the rate increases that would be required.

"We worked with the community to get feedback from key stakeholders and leaders and to educate them about what we were planning, specifically the drinking water resource center," Cummons says. "It's a generational investment."

There was a significant impact on water rates, and that meant sharing information about the condition of the treatment facility and the investment needed for a strong healthy water system that the community could rely on for the next 50 to 100 years.

> "We worked with the community to get feedback from key stakeholders and leaders and to educate them about what we were planning. It's a generational investment."
> **MICHAEL CUMMONS**

ENVIRONMENTALLY SENSITIVE

Mark Morin, P.E., of the consulting firm Hazen and Sawyer, was the design engineer for the project. He notes that rehabilitating the old plant would have cost about the same as a new building and still would have left the water plant at risk of flooding. The new plant was built about 1,500 feet from the old one but considerably higher and outside the flood plain.

Morin says the criteria for the Envision Silver Award guided many design and construction decisions by Maine Water and the general contractor, MWH Construction. For example, the new plant site was rocky and required significant blasting, but the rock taken out was reused on site. The construction team also took steps to avoid unnecessary underwater excavation when placing the new intake pump.

"To site our raw water pump station, we had some local regulations changed so we could site it closer to the river but a little bit higher and out of the flood plain," Morin says. "That minimized our excavations down by the river. That was a huge environmental benefit." They also used trenchless technology to install the new intake pipe.

ROOM TO EXPAND

New equipment includes variable-frequency drives (Square D) on all the pumps. The raw water pumps and filter backwash pumps are from Goulds Water Technology, a Xylem brand. The finished water pumps are from KSB.

The building is also designed with potential for growth. The feed pipes and other buried infrastructure are sized to take capacity up to 18 mgd. The roof and the electrical system are solar-ready.

Maine Water also took steps to protect the watershed of the Saco River, putting 237 acres of wetlands, including a red maple swamp and a brook trout stream, into conservancy. Stormwater from the site is managed so that rainwater slows down and filters into the soil instead of flowing directly into the river. The area around the new building is landscaped with native plants.

Although the new plant uses some space-saving technology such as inclined plate settlers (JMS) that provide better settling in less space than the old settling basins, the overall footprint of the Drinking Water Resource Center is about the same as the old water plant.

That's partly because a filter backwash recycling process was added to the system, and because there is a lot more space for workers and visitors and more administrative space. Maine Water wants the plant to be accessible both to the community it serves and to others in the industry.

"We like being the water utility in Maine that can host water classes," Cummons says. "We use the conference room as a training facility. We have given a fair amount of tours and had some class trips and some classes for operators. We are looking to ramp that up going forward." **tpo**

The Kill Creek treatment plant (2.5 mgd design) uses a Bio-Denitro phased oxidation ditch secondary process (Veolia Water Technologies).

Maintenance Does It

LONG-LIFE EQUIPMENT AT THE KILL CREEK WATER RESOURCE PLANT IN KANSAS INCLUDES A PAIR OF MIXERS THAT KEEP THE SECONDARY PROCESS WORKING SMOOTHLY

By Chris French

Some might consider the relentless maintenance regime at a treatment plant in Kansas to be almost too proactive.

But the longevity and reliability of the site's equipment speaks volumes for the way the Gardner wastewater facility is run, not to mention the multiple awards it has earned.

Scott Millholland, site superintendent in Gardner, just southwest of Kansas City, is a firm believer in keeping the Kill Creek Water Resource Plant clean, fully serviced and at optimum efficiency, at all times.

Plant equipment includes two mixers (Landia), that help keep everything in suspension in the racetrack-format nitrification/denitrification setup and have been operating since the plant was built by Kruger in 2002 with a Bio-Denitro phased oxidation ditch process (Veolia Water Technologies).

HARSH ENVIRONMENT

"The Landia mixers continue to keep everything moving and do a very good job for us," says Millholland. "We pull them up every spring and fall to pull off any rags and make sure there's nothing on the magnetic plug rings. After checking them over we put them right back into service. They're an integral part of what we do here."

In the corrosive world of wastewater treatment, proactive maintenance is partly summed up with the statement: Oil is cheap. "We didn't have to carry out any type of rebuild on the first Landia mixer until it had completed 14 years of service," Millholland says.

"We look after them properly, but they're a strong, solid design and very easy to maintain. Equipment should always be maintained properly, but clearly, these mixers are truly built to last. After our rotors have been on for an hour and a half, we run the mixers for 45 minutes.

"At just 13 amps, they are low on energy usage, especially when compared to blowers. We've just replaced 130-amp (125 hp) blowers with new units that draw just 50 amps, so it has been a very quick payback."

The team at the Kill Creek facility includes, from left, Dale Rittinghouse, Matt Solorio, David Birzer, Eric Westerfield and Scott Millholland.

NO COMPROMISES

Keeping 21-year-old mixers in top condition is just one of many reasons Gardner has rightly been recognized as an outstanding treatment facility. All 23 lift stations in the collection system are checked every day to ensure that wastewater is getting through properly.

Serving a population that has grown from 6,900 in 1998 to nearly 25,000 today, Kill Creek has won the Kansas Water Environment Association Wastewater Treatment Plant of the Year award seven times. Millholland oversees the entire facility, leading and mentoring his team while still working as an operator, mechanic and engineer.

> "The Landia mixers continue to keep everything moving and do a very good job for us."
> **SCOTT MILLHOLLAND**

The team is inspired by the goal of building better community for future generations and takes great pride in protecting the environment and waterways. The plant has not seen a permit violation for more than two decades.

The plant was originally designed to serve a population of 25,000 with a mgd capacity and now treats an average of 2.3 mgd. The modular design provides room to expand to 7.5 mgd without process changes.

"Gardner is one of the fastest growing cities in the United States, very much on the up with new jobs and an expanding economy," Millholland observes. "So it is very important that we keep at least one step ahead with our operations. We try to save money wherever we can, but never compromise on treatment quality."

FOCUS ON NUTRIENTS

In addition to population growth, the Kill Creek plant faces the challenge of meeting new effluent phosphorus and nitrogen limits. That means making process adjustments. Treatment in Gardner has evolved from lagoons, to fixed-film treatment with trickling filters, to rotating biological contactors, and now the oxidation ditch.

"We used to do pretty much everything on an on-call basis, from checking the water and wastewater plants, water breaks, turning meters on and off, and anything and everything else that needed to be done," Millholland says. "For new challenges that include removing nutrients, all of our equipment, no matter how new or old, will play a part." tpo

wwett24

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Welcome to the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show! The largest, most immersive showcase of the latest innovations within the wastewater industry. Every year, we bring together industry experts, cutting-edge technologies, and game-changing services all under one roof.

Join us for 90+ expert-led courses, live show demonstrations, hundreds of interactive booths, engaging networking opportunities, and celebrate with thousands of your industry peers!

Prepare to be blown away as you explore the sprawling exhibition floor, where leading companies unveil their groundbreaking equipment, state-of-the-art machinery, and revolutionary solutions. Witness live demonstrations that will leave you in awe as powerful machines tackle the toughest wastewater challenges with ease, pushing the boundaries of what's possible.

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Networking takes on a whole new dimension at the WWETT Show. Connect with like-minded professionals, forge new alliances, and tap into a vibrant community of wastewater enthusiasts from around the globe. Share stories, challenges, and successes while building relationships that will propel your career and business to new heights.

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On the Grow

A RAPIDLY EXPANDING POPULATION IS THE CRITICAL CHALLENGE FOR JENNA COVINGTON AND HER TEAM AT THE NORTH TEXAS MUNICIPAL WATER DISTRICT

STORY: **Ted J. Rulseh**
PHOTOGRAPHY: **Olivia Ogren-Hrejsa**

"There are 55,000 people moving into our service area every year," says Jenna Covington. "And none of them are bringing water with them."

That sums up the continuing challenge facing the North Texas Municipal Water District. When founded in 1951 the district served 32,000 people. Today it serves 2.1 million in up to 80 communities across 2,200 square miles and 10 North Texas counties in one of the fastest-growing areas of the country.

As executive director and general manager, Covington leads a district that provides drinking water, wastewater treatment and solid waste services. It's a constant exercise in staying ahead of the curve. "Water and wastewater is the only critical infrastructure that must be in place before the growth occurs," she observes.

Covington leads some 850 team members, including those who operate and maintain:

- Seven drinking water treatment plants (combined capacity 946 mgd), nearly 700 miles of water transmission pipelines, 20 major raw and treated water pump stations, and six major water supply sources.
- Thirteen wastewater treatment plants and 23 lift stations that convey and treat 163 mgd.
- Three solid waste transfer stations and a regional disposal facility accepting about 1 million tons of waste each year.

DRAWN TO WATER

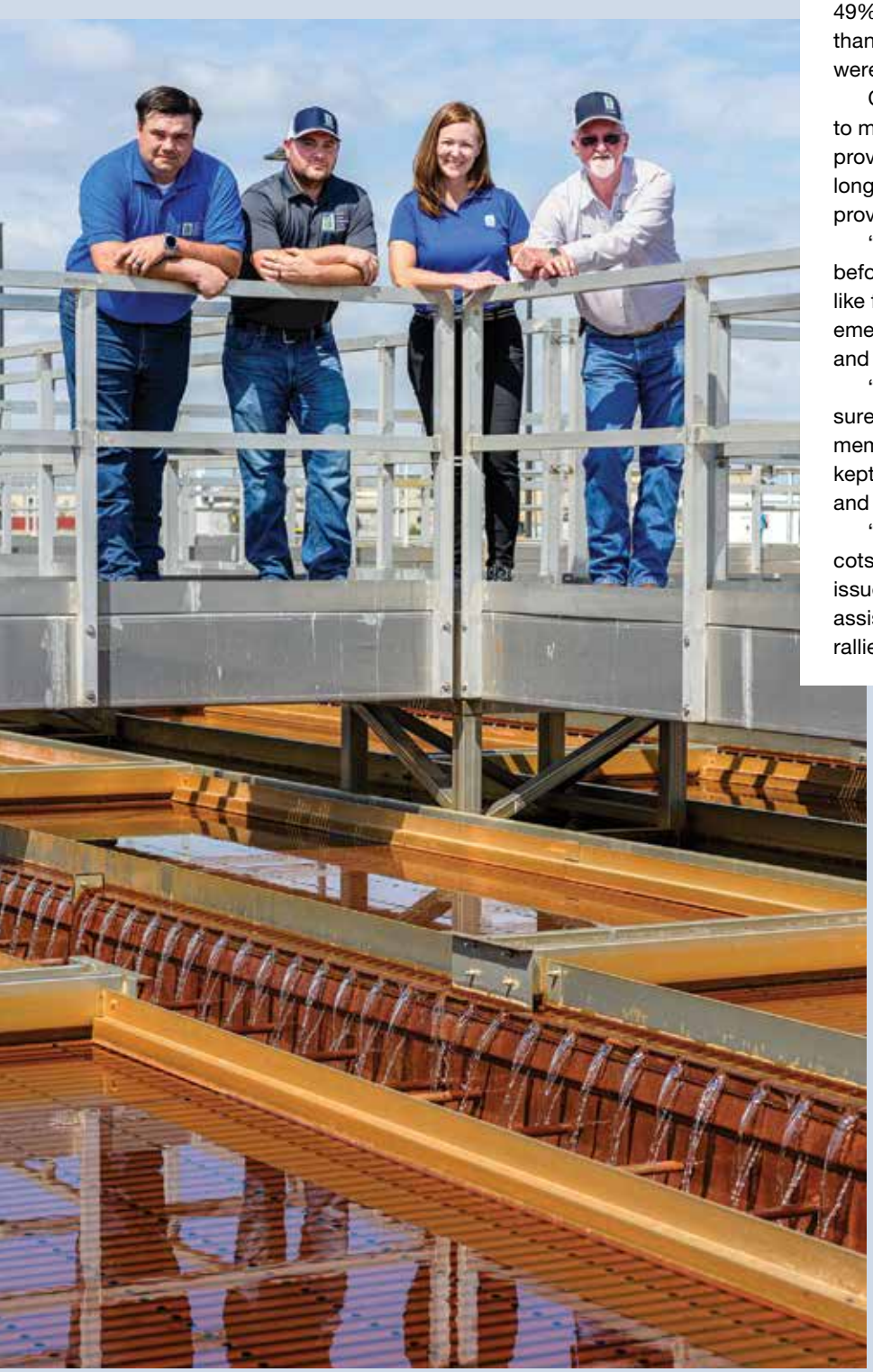
Covington grew up in West Texas and from early school years excelled in math. During summers and school breaks, she worked in the oilfields with her father, a land surveyor. After high school she enrolled in a five-year master's degree program in environmental engineering at Texas Tech.

Jenna Covington, executive director/general manager, North Texas Municipal Water District

"As I got into the course work and had internships in the field of water, I developed a passion for working in water," she recalls. "My entire career has been dedicated to working in the water industry, and it has been wonderfully rewarding to provide life-sustaining services to the communities I've helped serve."

After college in 2000, Covington joined the consulting firm CH2M Hill (now Jacobs), assisting water utilities across North Texas. She started as a staff engineer and advanced into roles including project manager, operations lead and vice president. In 2015 she became

> “Water and wastewater is the only critical infrastructure that must be in place before the growth occurs.”
>
> **JENNA COVINGTON**



TRIAL BY ICE

Jenna Covington takes pride in the way the operations teams at the North Texas Municipal Water District stepped up in the face of Winter Storm Uri, which locked much of the state in snow and ice in February 2021.

The storm caused widespread power blackouts. Some 69% of Texans lost power at some point from Feb. 14-20, and about 49% had water service disruptions. The storm was linked to more than 200 deaths, and the state’s storm-related financial losses were estimated at up to $130 billion.

Covington observes, “Our people pulled together and worked to maintain essential services. Team members responsible for providing safe, reliable water and wastewater services worked long hours to overcome operations challenges. We continued to provide services throughout the event.

“Our people and crews persevered with courage and service before self, working under extreme conditions to solve problems like frozen pipes and equipment, and to ensure delivery of fuel to emergency generators at water and wastewater pump stations and plants.

“Our lab personnel maintained testing operations to make sure that safe and clean drinking water was delivered to our members and customers. District executives and supervisors kept in close contact with officials in the communities we serve and with our energy providers.

“Some team members worked double shifts. Others slept on cots on site to be available to respond quickly to operations issues. People worked outside their regular duties, jumping in to assist wherever they could. It was a team effort. Our employees rallied continuously to meet the needs of our communities.”

Jenna Covington, P.E., BCEE, North Texas Municipal Water District

Wylie, Texas

POSITION:
Executive Director/ General Manager

EXPERIENCE:
23 years in the industry

EDUCATION:
Bachelor’s and master’s degrees, environmental engineering, Texas Tech

CERTIFICATIONS:
Professional Engineer and Board Certified Environmental Engineer

AFFILIATIONS:
WEF, Water Environment Association of Texas (past president)

AWARDS:
WEF Arthur Sidney Bedell Award, WEAT Emerging Leader Award

GOALS:
“Live out our vision statement: Regional service through unity: meeting our region’s needs today and tomorrow.”

From left, Adam Baugh, Leonard Water Treatment Plant supervisor II; Justin Screws, Tawakoni Water Treatment Plant supervisor; Jenna Covington, executive director/general manager; and Billy Hall, Bonham Water Treatment Plant supervisor. They are shown at the sedimentation basin at the Wylie Water Treatment Plant Complex.

> “For people to follow they need to trust that you’re looking out for their best interests. One of my strengths is relying on the people around me.”
> **JENNA COVINGTON**

Covington reviews transmission system pressures with Cameron Buckley (left) as Matt Harvey, water operator III, relays the storage tanks’ water levels to Justin Screws in the control room at the Wylie Water Treatment Plant Complex.

assistant deputy for wastewater at the North Texas district; she took her current position in May 2021.

She credits “informal mentors” with helping in her life and career: “I was fortunate to have a father who taught me that you can find your work enjoyable and rewarding, and a mother who stepped into leadership roles in any organization where she participated.

“In my years as a young professional, colleagues taught me how to engage with operators who ultimately make the treatment processes I was designing work. Others showed me how to develop project execution plans, lead people, and improve my communication skills. I really enjoy learning from people who are experts in their domains.”

LEARNING TO LEAD

Covington credits her six years overseeing wastewater operations for helping build her leadership skills. “While supporting the district as a consultant I knew we had a great group of people and a tremendous mission,” she says.

“Once on staff my appreciation grew. Our people have pride in the work they do to fulfill our mission and provide essential services 24/7/365. Early in my tenure, I spent a lot of time talking to people throughout the organization to understand our challenges and determine where I believed we should move forward.”

The team at the Wylie Water Treatment Plant Complex includes, front row, from left, Jason Fisher, Small Plants Wastewater Treatment Plant supervisor; David Earls, Muddy Creek Wastewater Treatment Plant supervisor; Marty Luke, wastewater conveyance supervisor; Jenna Covington; Jason Pittsinger, Rowlett Creek and Floyd Branch regional wastewater treatment plants supervisor; and Justin Screws, Tawakoni Water Treatment Plant supervisor. Back row, Billy Hall, Bonham Water Treatment Plant supervisor I; Jeremy Thompson, South Mesquite Creek Regional Wastewater Treatment Plant supervisor; Michael Brogdon, Sister Grove Regional Water Resource Recovery Facility supervisor; and Adam Baugh, Leonard Water Treatment Plant supervisor.

Key focus areas included workforce development and training, maintenance, and asset management: “By taking a team-based approach, getting the right folks plugged in, and taking small steps in the right direction, we were able to make remarkable progress. One of our team’s greatest strengths is willingness to consider new ways of doing things.

“Another is their work ethic, their ‘git ’er done’ philosophy. They look to provide reliable service in the face of any challenge. They demonstrate ingenuity and creative thinking. They look out for one another. They are good-hearted, service-minded people.” Her close collaborators include:

- Water plant supervisors Justin Screws, Billy Hall, Adam Baugh and Skylar Holley
- Wastewater plant supervisors Daniel Spradlin, Jason Pittsinger and Jeremy Thompson
- Baron Snelgrove, David Earls, Michael Brogdon, and Jason Fisher
- Wastewater conveyance supervisor Marty Luke

To Covington, leadership starts with building a work environment where people freely contribute a diverse combination of thoughts, skills, perspectives and personalities for the good of the organization. “For people to follow they need to trust that you’re looking out for their best interests,” she notes. “One of my strengths is relying on the people around me. I’m thankful to work with a fantastic team that has bought into our vision, mission, goals and values.”

DEALING WITH GROWTH

A cohesive team is essential to meeting the district's challenge of serving a fast-growing population. On top of day-to-day operation of treatment plants, pump stations and pipelines, there's a continuous need for long-range planning.

"We recently evaluated potential raw-water supply sources to serve the area through 2080," Covington says. A key source is the newly developed Bois d'Arc Lake, the first reservoir built in Texas in more 30 years. It covers 16,641 acres and is named after the bois d'arc tree, a symbol of the region.

"We completed construction in fall 2022, and the associated Leonard WTP went online in March of this year," says Covington. First-phase plant capacity is 70 mgd. A design is already in place to double that amount in the next few years; by 2036 the plant will be able to supply 280 mgd.

Rapid growth is a challenge not just for engineering and construction teams but for facility operators. Covington observes, "Our people must be highly skilled to operate facilities that often run near their rated capacity until new facilities can be brought online. And we must be able to operate new facilities at significant flows right from the start. For example, a few months after we started up our Leonard treatment plant, it was running at around 60 mgd."

BUILDING THE TEAM

All this requires recruiting and retaining highly qualified operators amid a wave of retirements and a chronic shortage of new entrants to the profession. "We're thankful for a board of directors that appreciates the work of our employees and demonstrates that by offering strong compensation and a competitive benefits package," says Covington.

"Building a talented, competent and committed team is a strategic goal, and we accomplish that through mechanisms such as recruiting from trade schools and attracting people into the water sector. With the growth we're experiencing, we regularly bring on new facilities and the people we need to operate and maintain them. Over the past several years we've made significant strides in launching new programs to support the growth and development of our team members."

One such program consists of certified continuing education courses led by district staff and offered to employees of the district and of communities the district serves: "This enables members of our staff to become trainers and allows us to tailor the material for our organization."

> "The Operations Challenge team members have grown as individuals and have been a great influence on those around them."
> **JENNA COVINGTON**

An initiative just beginning is a competency development program for operators that clearly defines the knowledge, skills and abilities they must master to qualify for promotion to the next level.

In a successful Waterworks program, no longer in operation, the district partnered with a community college to create two training paths toward Class D (starter level) water or wastewater operator licenses. After course work participants could apply for internships.

"We had 57 students complete the course work, 15 of them attained their Class D license (eight of them interned here) and we hired three of them full time," says Covington. "The state grant that funded the program has been discontinued, but we're looking for other innovative ways to achieve similar results in the future."

Another avenue for team development is the district's Centrifugal Force Operations Challenge team, which in 2023 at the Texas Water Conference became the first ever to record the top scores in all five events. In 2022 the team placed second in Division 1 in the national Operations Challenge at WFTEC. Team members were:

- Zachary Jackson, team captain, operations, training and development manager
- Jeremy Thompson, coach, South Mesquite Creek treatment plant supervisor
- Caeleb Butler, South Mesquite, lead operator, liquids
- Joshua Deaver, South Mesquite, lead operator, solids
- Chris Legg, South Mesquite, operator
- Mauriece Keys, Sister Grove treatment plant, lead operator

"The Operations Challenge team members have grown as individuals and have been a great influence on those around them in their desire to learn skills that are applicable to our work," says Covington.

From left, Zeke Campbell, assistant deputy water treatment and conveyance; Billy George, deputy director for water and wastewater; Covington; and Galen Roberts, assistant deputy for water resources, meet regularly in Covington's Wylie plant office.

PROMOTING STEWARDSHIP

As the district and the entire region face water shortages, Covington considers it essential for residents to conserve water. "The supplies we're looking at today are farther away and more costly," she says. "Conservation is a key aspect of our water-supply planning. It will help stretch our supplies, but given the growth projections for our service area, additional supplies will be necessary.

"We spend a lot of time and energy, and will continue to do so, educating people about how to use water wisely. We provide information on how to efficiently water their yards. We also go into public schools to teach fourth and fifth graders how to be good stewards of our resources. There is no greater influence on adults in the household than a fourth or fifth grader putting the pressure on them."

As for her own future, Covington looks to embody the district's vision statement: Regional service through unity: meeting our region's needs today and tomorrow.

"I will lead in that direction by acting as a collaborative leader who brings people together to provide excellent services. The services we provide are essential to the high standard of living we've become accustomed to. Our staff, board of directors, customers and partners will work together to provide dependable, high-quality services to the more than 2 million residents we serve today, and to future generations." **tpo**

Early Connections

MELANIE VINES LAUNCHED AN AWARD-WINNING WEF STUDENT CHAPTER. NOW SHE'S STARTING A CAREER DEDICATED TO ENSURING QUALITY WATER, IN THE US AND ABROAD.

By Ted J. Rulseh

Melanie Vines entered college with her sights set on an engineering career focused on solving water problems and improving water quality in the United States and internationally.

Now, with bachelor's and master's degrees in environmental engineering and a Ph.D. in civil engineering, all from the University of Alabama, she's a few months into a position with the Birmingham Water Works Research and Innovation Team.

A significant component of her schooling was founding and leading a Water Environment Federation and American Water Works Association student chapter at her university. The group, which took the name Young Water Professionals, received WEF's inaugural Student Chapter of the Year Award for 2022.

In an interview with *Treatment Plant Operator,* Vines talked about her educational journey, the benefits of involvement with water industry associations, and her career aspirations.

Melanie Vies, founder and past president of the University of Alabama WEF Student Chapter.

tpo: How did you become interested in the water industry as a career direction?

Vines: I grew up in Maryville, Tennessee, in the Knoxville area. For a part of high school I thought of going into international studies because I was intrigued by different cultures. I attended a Tennessee Governor's School for international studies, but when I listened to the speakers there who had an environmental focus, I became excited by the idea of helping people get clean water internationally.

> "The chapter has been wonderful in helping members build professional networks and gain exposure to the different career paths available."
> **MELANIE VINES**

tpo: How did that experience translate to the decision to study engineering in college?

Vines: My mom has a degree in civil engineering, and she encouraged me to look into that field and environmental engineering. I saw that as a practical route to being able to address water and wastewater issues. In my senior year of high school I interned with my hometown water and sewer department, where I shadowed the head engineer and the plant operators. Around that time the Flint water crisis hit the national news. That's when I became aware that everything is not always perfect in the U.S., and that we have issues here in our backyard.

tpo: What factors led to your choice of universities?

Vines: I chose the University of Alabama for several reasons. Their merit scholarships are excellent. They have a fantastic environmental engineering program, and the school has a focus on service and giving back that I appreciated. Once there I quickly got involved in research and learned about the issues with sanitation in the Black Belt of Alabama. That drove home that I wanted to work to improve water quality globally but also stateside. From the moment I got involved in research my freshman year, I knew that was the direction I wanted to go. In my Ph.D. studies my focus was on drinking water treatment, specifically preventing and mitigating disinfection byproducts.

tpo: How would you describe your experience in your early years of college?

Vines: In my undergraduate career it was challenging to keep the end goal in mind. Sometimes, especially during sophomore year, I was in a lot of technical classes that didn't seem to have a direct application to anything. It was easy to get bogged down in classwork and not see where all of it was going. But when I started my junior-level environmental engineering classes, all the pieces started coming together and I started to see the connections of water and wastewater to society. That included little things like understanding the purpose of construction projects that hold up traffic.

tpo: How were things different at the post-graduate level?

Vines: Much of my graduate work was done through the pandemic, so I was not only learning to work more independently but being forced to do so during the period of isolation. It was also an adjustment because in graduate school you get less feedback. You're not constantly getting grades on everything. You're still in school, but you have to treat it more like a job. Now, it's rewarding to look back and see how far I've come and how much I've learned.

tpo: How did you become involved with a student WEF and AWWA chapter?

Vines: A couple of young professionals from the local WEF Member Association, the Alabama Water Environment Association, approached my academic adviser, Dr. Leigh Terry, and asked if she would be interested in starting a student chapter. She agreed to oversee it and to find a student willing to be on the ground doing the work. And she reached out to me. The AWEA has been very involved in helping our group grow.

tpo: What was involved in getting the chapter up and running?

Vines: I did the groundwork to put a team of officers together. We were

> "I see my work helping to improve water quality in Birmingham and in the U.S. overall."
> **MELANIE VINES**

officially founded in the fall of 2020. That was a challenge in itself because due to the pandemic we were only able to meet virtually. It was a rocky start, but once we were able to meet in person the chapter really filled a void for a lot of students. In our department the American Society of Civil Engineers is pushed very hard, but if you're pursuing a career in water, AWWA and WEF are your professional organizations. I hadn't even heard of them until graduate school.

tpo: How does the student chapter benefit its members?

Vines: I went through my undergraduate career thinking my only career options were academia and consulting. Those are great options, but there are many other career paths in water and wastewater. The chapter has been wonderful in helping members build professional networks and gain exposure to the careers available. I have friends who graduated with me in 2020 and took the first job offer they got because they didn't know what the job market would look like. Now they might be stuck in something that's not the right fit, but they have no one they can turn to who can help them find something else. That is less likely to happen if you're involved in a professional organization like WEF early on and can start building those connections.

Leaders of the University of Alabama WEF Student Chapter accept the 2022 Student Chapter of the Year award. From left are Sarah Ortbal, president for 2022-2023; Karin Britt, president for 2021-2022; Melanie Vines, founder and president for 2020-2021 and vice president for 2021-2023; and Tina Sheikhzeinoddin, the group's professional mentor from the Alabama Water Environment Association.

tpo: What have been the chapter's most significant activities?

Vines: We have meetings twice a month where we bring in speakers from different areas of the field. They talk about their career, how they got into it, and any advice they have. We've also taken field trips, and that has been a great way to bring in new members. We've visited our local water and wastewater treatment plants. We've also gone to a couple of conferences. After we won the Student Chapter of the Year award a few of us were able to attend WEFTEC. We also took our previous and incoming officers to the Alabama-Mississippi Water Joint Annual Conference in Mobile in April.

tpo: What kinds of people have you connected with through the student organization?

Vines: I've connected with a lot of people from the AWEA, many of whom are in leadership positions within WEF and within their companies. We've presented to AWEA monthly meetings on what we're doing as a student chapter.

tpo: How have you sustained your connections now that you are no longer a part of the student chapter?

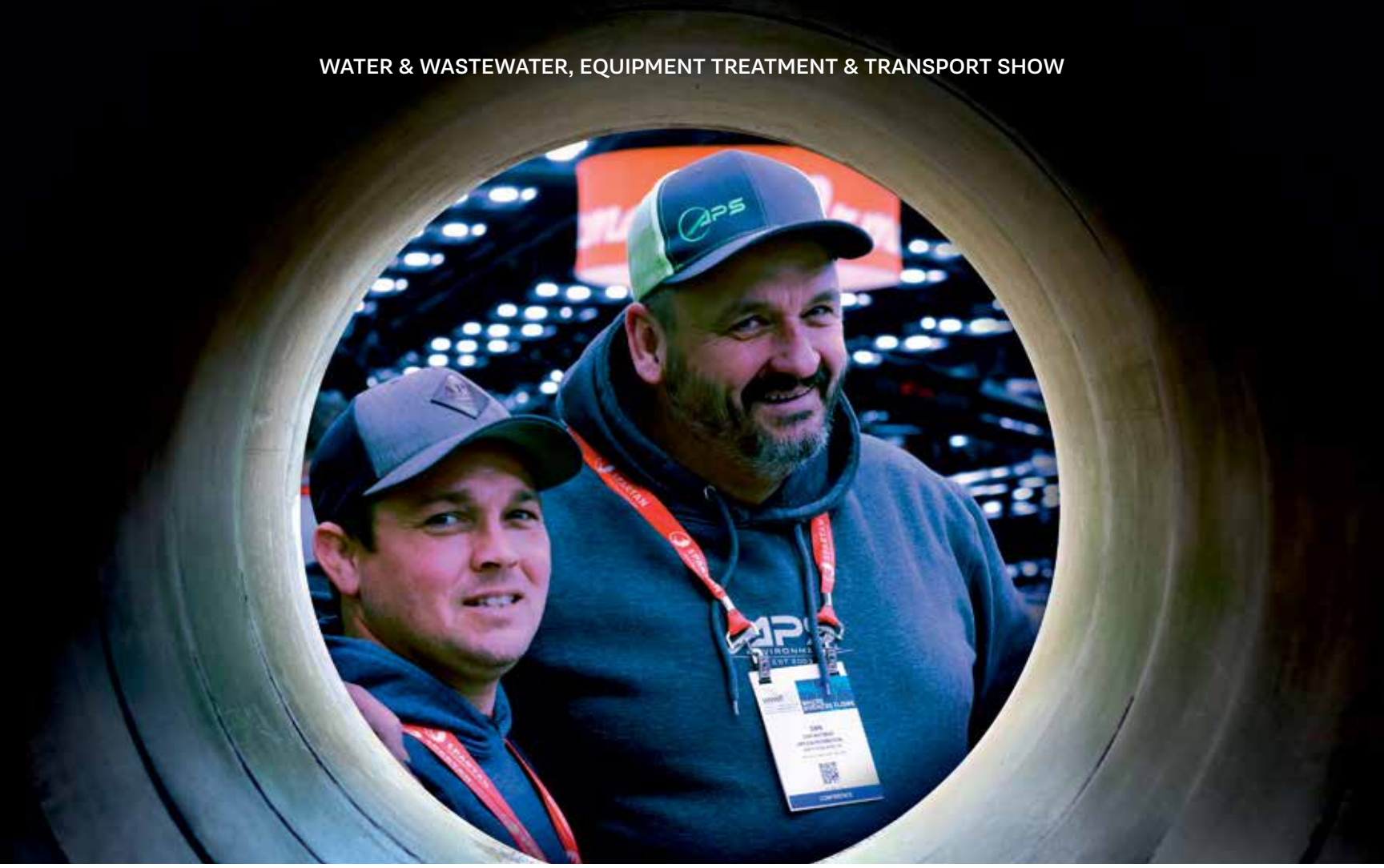
Vines: As I've transitioned toward being a Young Professional rather than a student, I've gone to regular WEF and AWWA lunch-and-learns. As a member of the Young Professionals group I'm able to keep the relationships up and continue building the direction of my career.

tpo: What is the nature of your position with Birmingham Water Works?

Vines: During the last year of my Ph.D. work I interned there. In the research and innovation area they have a pilot-scale water treatment plant where they can test out new chemicals and technologies to see if it is worthwhile to invest in them full scale. My position is a perfect blend of using my research background within the practical context of doing work to improve the quality of water people drink.

tpo: Where do you see yourself longer term?

Vines: I'm not sure where my career will take me in the sense of exact job roles, but 10 to 15 years down the line I hope to be in a role where I can mentor students and young professionals coming into the industry and use my expertise and my position to educate the public. The water and wastewater industry is often overlooked and misunderstood. Right now, through my job, I'm doing research to find solutions to improve water quality and to better meet current and future EPA regulations. By doing that work at our pilot plant I hope to help other utilities that don't have similar resources. For example, here's a solution for organics removal to mitigate DBPs. I see my work helping to improve water quality in Birmingham and in the U.S. overall. **tpo**



THE PIPELINE TO MORE CONTACTS IS HERE.

Great businesses are built upon great relationships. Even in this digital age, the best way to establish invaluable relationships is with a face-to-face interaction. Where can you wastewater professionals like yourself? Right here at The WWETT Show.

The WWETT Show is the the world's largest annual trade show for wastewater and environmental service professionals. Take part in a myraid of social events, attend our accredited education program, consult with industry experts, and bump into old friends in the massive Expo Hall. Did we mention the fan-favorite Welcome Party attended by thousands of your collegues from all over the world?

Grab a beer, share some laughs, and get business done in Indianapolis. While you're at it, invite a friend and make WWETT 2024 the social event of the year!

wwett 24

CONFERENCE: January 24-26
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Xylem announces leadership changes

Xylem announced that after a decade leading Xylem, President and Chief Executive Officer Patrick Decker will retire as CEO at the end of 2023. As part of the company's long-term succession planning process, Decker will be succeeded by Matthew Pine, Xylem's chief operating officer, effective Jan. 1. At that time, Decker will retire from Xylem's board and Pine will join as a director.

Mark Moore named as new sales manager for Blue-White

Mark Moore

Blue-White has welcomed Mark Moore as its new regional sales manager, and will support both the municipal and industrial markets. He will serve clients in Texas, Louisiana, Arkansas, Oklahoma, Colorado, Wyoming and New Mexico.

Aquadose's AD-150 dosing system has new distribution partner

Aquadose's AD-150, an automatically adjustable, portable chemical dosing system, has secured sole distribution with pipeline equipment specialist AHS Pipeline Innovation, based in Leeds, United Kingdom. Primarily used in the chlorination and dechlorination of pipelines, the AD0150 is regarded as an intelligent dosing system due to its automatic flow-proportional dosing control and process validation.

Garry Queen joins DSI/Dynamatic as sales application engineer

Garry Queen

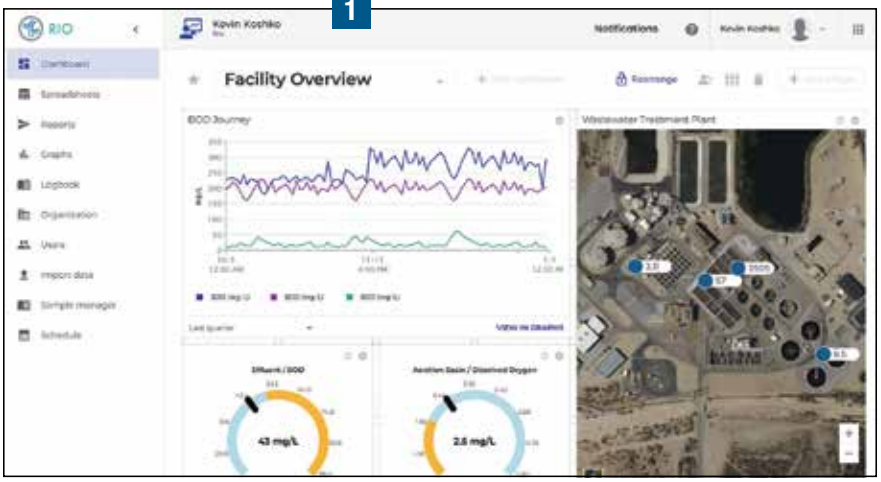
DSI/Dynamatic welcomed Garry Queen as a new sales application engineer and will work with its municipal market customers. He holds a Bachelor of Science in electrical engineering from the University of Illinois, Chicago, and is licensed to practice in several states. With more than 30 years' experience designing and applying electrical power, controls and automation systems, Queen has provided engineering services to companies including IBM, ArcelorMittal, Schneider Electric, Baldor Electric and ABB throughout his career.

Atlas Copco acquires dewatering pump manufacturer Sykes Group

Atlas Copco acquired Australian-based Sykes Group from Seven Group Holdings Ltd. Sykes is a global manufacturer of dewatering pumps and is headquartered in Newcastle, New South Wales. With 123 employees worldwide, Sykes serves the mining and wastewater segments with a wide range of surface dewatering pumps. It also provides chopper and cutter technologies for wastewater applications and has a portfolio of hydraulic submersible pumps.

Environmental Site Solutions acquired by Newterra

Newterra acquired the assets of Environmental Site Solutions, a Seattle area-based supplier specializing in filtration systems tailored to water treatment solutions. Founded in 2018, ESS specializes in the supply and turnkey services for water treatment filtration solutions, including water treatment equipment, filter system rentals and leases, system integration, filter media (including granular activated carbon), ion-exchange resin, proprietary trace metals removal media and exchange services and system services. tpo



1) The Rio web-based application ties in data from SCADA, laboratory information management systems and field collection, all in one place.

2. The Rio Mobile app can be used on any smartphone or tablet.

Goodbye Manual Entry. Hello Efficiency.

CLOUD-BASED AND CENTRALIZED DATA MANAGEMENT HELPS WATER AND WASTEWATER UTILITIES STREAMLINE OPERATIONS AND ENSURE CONSISTENT PERMIT COMPLIANCE

By Ted J. Rulseh

Nearly 90% of water and wastewater utilities still collect their operations data on paper and then store it across multiple, static files.

That's according to Aquatic Informatics, a company that offers regulatory compliance and operational data management solutions for the water sector. Errors that creep into bench sheets, paper records and spreadsheets add to staff workload and increase the risk of permit violations and fines.

A data management system that improves visibility across facilities can help users make sure they are operating within permit requirements. It can also streamline operations with centralized data at every step from field data collection to auditable compliance reports.

AQI offers Rio cloud-based software, designed to centralize daily workflows for utilities of all sizes. Centralized management breaks down data silos by integrating lab, process, field and other data sources to improve visibility and decision-making across the organization.

Users can track critical metrics, visualize trends and use customizable alerts to detect and address problems. Kevin Koshko, product manager for water treatment software solutions, talked about the Rio offering in an interview with *Treatment Plant Operator.*

tpo: What was the motivation for bringing the Rio solution to the market?

Koshko: It was important for us to offer a cloud-based solution for utilities that didn't have sophisticated IT infrastructure and in-house technical resources. We wanted to provide a user-friendly, intuitive, approachable experience that anyone in the utility can use and gain value from, regardless of their experience with data management. Rio interfaces with multiple systems and enables users to do things such as visualize data through dashboards, simplify reporting, observe trends in the data and update operations to maximize compliance, optimize energy and chemical spend, and more.

> "The barrier to entry gets removed when the software is user-friendly, easy to access, and cloud-based."
> **KEVIN KOSHKO**

tpo: Is your target customer base mostly smaller utilities?

Koshko: Smaller utilities benefit because they don't have to install any software and will not require internal IT resources to use the product. But as for the power of the software and the value it provides, we have extremely large utilities using it, as well. The barrier to entry gets removed when the software is user-friendly, easy to access and cloud-based.

tpo: What kinds of challenges or problems does this solution help users avoid?

Koshko: Most utilities we encounter are trying to enter data into multiple spreadsheets in multiple silos, pulling data from multiple systems without having any sort of centralized database for it. Rio automatically imports information from SCADA, field data collection and lab data. When you do that you eliminate errors from manual data entry. As a compliance solution, Rio helps users avoid any sort of violations while saving time, money and resources.

tpo: How exactly does the software support consistent compliance?

Koshko: It centralizes data in a secure database and provides full visibility into it. When you have that database and the visibility tools — the dashboards, trending and data analysis views — that improves decision-making and ultimately deepens understanding of the process, so that if they

> “Whether they’re a seasoned person who enjoys working with data, or a field operator with limited technology experience, there’s a solution within the Rio platform.”
> **KEVIN KOSHKO**

go out of compliance, they can get back in very quickly. Customizable alerts are another critical feature of the system. When limits are reached or exceeded, alerts can be automatically texted or emailed to the appropriate operator. Proactive notification is essential to avoiding violations.

tpo: How would you describe the components of this application?

Koshko: There are two basic parts. The Rio web-based application ties in data from SCADA, laboratory information management systems and field collection, all in one place. That’s where users can view the data, reports and dashboards. The other component is the Rio Mobile app, which supports easy-to-use field data collection. Within treatment plants, there are operators doing daily rounds, collecting information from various locations throughout the facility. That data syncs with the Rio platform in real time.

tpo: In brief, how does the software work? How do users interact with it?

Koshko: The web-based application is used on desktop PCs, laptops, or tablets, and Rio Mobile can be used on any smartphone or tablet. Within the desktop view, users can access the dashboards and all the centralized data, including trends. It provides a complete picture of the facility. On the mobile app they can see a list of tasks they need to focus on during the day. As they enter data from observations in the field into the mobile app, that syncs back to the desktop view.

tpo: How is Rio different from other data management offerings on the market?

Koshko: Rio is the only cloud-based solution that automates and simplifies compliance and operations in one place, thus making our customer’s lives easier. Plus, the user friendliness and the intuitive user experience makes it easily approachable for anyone in the organization. Whether they enjoy working with complex data, or they have limited technology experience, there’s a solution within the Rio platform. Lastly, is the ability for utilities to quickly roll out and derive value from the software in weeks, not years.

tpo: How does Rio interact with laboratory information management systems?

Koshko: Rio has a sample manager module that supports grab sample collection and field sample entry, along with the ability to turn over those samples to an in-house or contract lab. Our software takes the final data from the lab directly into Rio for reporting with a digital chain of custody.

tpo: How easy is it for operators to learn how to use this software effectively?

Koshko: We purpose-built Rio mobile for ease of use and to have a very short learning curve. That has been validated, as essentially all Rio users have gotten up and running quickly and are excited about its ease of use.

tpo: What kind of user support is available to customers?

Koshko: We have an outstanding support team that can provide training to the end users as part of implementation. We also have an online interactive learning management system. New users have access to tools for learning the software without requiring a lot of time and resources. **tpo**

OZ Lifting Products Tele-Pro davit crane

OZ Lifting Products' patented Tele-Pro davit crane features a telescoping boom adjustment that can be moved in and out while under load. A ratchet screw jack allows the user to adjust the boom from horizontal to 45 degrees while under load and the 360-degree rotation of the crane allows for a full range of motion. Smart latch technology at the boom/mast means no tools are required for assembly. A zinc-plated finish provides added corrosion protection. The Tele-Pro is available in 500-, 1,200- and 2,500-pound capacities. Volt AC and DC electric winches are optional on the 500- and 1,200-pound models, or a manual winch with a drill drive adapter is available for all three models. The cranes are made in the USA and each one is individually tested and certified at 125%.

800-749-1064; www.ozliftingproducts.com

ControlAir electro-pneumatic pressure regulators series

ControlAir has introduced a new Type 1000P electro-pneumatic pressure regulator series. The series consists of the Type 1000P precision pressure regulator, Type 1005P high-flow pressure regulator and the Type 1010P economic pressure regulator. The regulators are complete closed loop servo systems consisting of two solenoid valves, an internal pressure sensor and electronic controls. Based on analog signals, the pressure is controlled by two solenoid valves to maintain precise pressure: one valve functions as inlet control, the other as exhaust. The pressure output is measured by an internal or an external feedback pressure sensor that provides a feedback signal to the electronic controls.

800-216-3636; www.controlair.com

QED Environmental Systems Xact Count pump cycle counter

QED Environmental Systems' Xact Count pneumatic pump cycle counter reliably monitors pump performance, maintenance cycles and estimating liquid volumes being pumped. The cycle counter directly monitors the water discharge flow rather than monitoring pneumatic airflow as a proxy. While designed specifically for AP4 landfill remediation pumps, the Xact Count is capable of monitoring flow on many different applications. The liquid pulse detecting unit is placed in-line between a pump and its discharge reservoir or force main. It requires no external power source. A digital readout displays the number of times a pump cycles. An Xact Count cycle counter consists of a valve housing, an internally located and magnetically integrated poppet, and a digital display. All wetted parts of the Xact Count are 316 stainless steel, and the seat and poppet are also constructed of wear-resistant stainless steel.

800-810-9908; www.qedenv.com

BinMaster BMRX-100 bin level indicator

The new BinMaster BMRX-100 rotary level indicator is an electro-mechanical device used in solids and powders to prevent bin overfills, dry runs, or to shut off a process. The

product spotlight

water

Volumetric chemical feeder excels in water treatment

By Craig Mandli

Dry chemical feeders are used for many purposes other than fluoridation in a water treatment plant. The popular **Eagle Microsystems VF-100 Volumetric Feeder** is one of the most popular, providing accuracy, reliability, long life and durability. It also offers less maintenance, as no lubrication, greasing or oiling is required. There are also no belts, gears, sprockets or chains to maintain.

VF-100 Volumetric Feeders use a direct-drive, variable speed, TENV DC gear motor for simple, reliable, dependable operation. No special provisions are required when feeding potentially incendive chemicals such as carbon.

"The VF-100 typically finds its home in the water treatment industry feeding dry chemicals like lime, carbon, fluoride, soda ash and others," says Jamie Ball, sales/marketing for Eagle Microsystems. "It can also be purposed to operate as a dry polymer system."

Feed rates from 0.04 to 17 cubic feet per hour are further controlled by varying the speed of the motor using a state-of-the-art electronic SCR speed control, resulting in 2% or better accuracy with free flowing materials. A 30-1 turndown provides a wide range of speeds for the selected drive, while maintaining required torque throughout the operating/feed range. Should there ever be a clog of obstruction, the current limiting circuitry will turn off the unit before any damage occurs.

"Oftentimes we have to tweak certain things on the feeder to make it fit exactly into a customer's process need, which is something we are more than happy to do," says Ball. "We customize the feeders when need be to ensure that the end user gets exactly what they are looking for."

VF-100 Volumetric Feeder from Eagle Microsystems

The motor drive is directly linked to the feed screw, resulting in smooth and continuous material flow. It offers local or remote control of feed rate. The controller, housed in a rugged NEMA 4X enclosure, can be mounted on the unit or remotely for more convenient access and control. Ideal for flow pacing, the speed control provides continuous drive control from a remote signal.

"The VF-100 has been in production for over 20 years," says Ball. "With feedback from end users, we have made changes and added some options that fit into the harsh demands of the water treatment industry. The feeder is simple and rugged, meaning it holds up very well to the harsh demands of the water treatment industry. Plainly put, the VF-100 just works."

800-780-8636; www.eaglemicrosystems.com

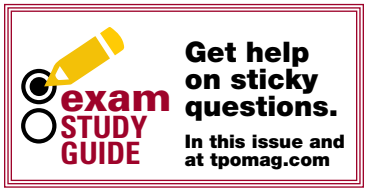
BMRX-100 has no printed circuit board, so it's impervious to moisture and vibration found in many tough processing environments. By alerting to full and empty vessel conditions, it prevents waste and saves time when handling bulk materials stored in bins and silos. It's designed for materials with a bulk density of 2 pounds to over 100 pounds per cubic foot for use in ordinary storage and processing conditions. It is designed to rotate once installed, keeping conduit entries pointed toward the ground, mitigating the risk of moisture damaging internal components.
800-278-4241; www.binmaster.com

Pace PFAS test method ASTM D8421/EPA 8327

Pace Analytical Services' PFAS Test Method ASTM D8421/EPA 8327 applies to aqueous and solid sample material. It uses isotope dilution and liquid chromatography tandem mass spectrometry to analyze for up to 44 PFAS compounds in both aqueous and solid sample material. This test method requires only a 5 mL sample, reducing waste. The test method offers method detection limits that meet the EPA's proposed drinking water standards and Regional Screening Levels.
612-607-1700; www.pacelabs.com

Hayward Flow Control WCV Series wafer checks

Hayward Flow Control has added 10- and 12-inch sizes to its WCV Series full pattern wafer check valves. The large-diameter WCV Series features a thermoplastic injection molded construction with the angle seat and disc design. Integral bolt eyes and the handgrip are molded into the body for ease of installation and safety. The seat and disc design allows for high flow capacities, and is equal to or better than most metal wafer checks. The full pattern design also eliminates the need for spacers or specialty flanges allowing for easy installation. The new valves are available in PVC and CPVC materials. Both sizes have maximum pressure rating of 150 psi nonshock at 70 degrees F and fit ANSI150 Class flanges. Size 10-inch DN250 valves will also fit PN10 flanges.
800-429-4635; www.haywardflowcontrol.com
tpo



product spotlight
wastewater

Variable-frequency drive a fit for mobile dewatering

By Craig Mandli

Variable-frequency drives are proven to greatly improve efficiencies in wastewater treatment facilities. To this end, **Pioneer Pump** recently introduced the **ElectricPAK VFD,** a rugged, packaged variable frequency drive solution designed to withstand the demands of mobile dewatering applications, making it ideal for small to medium-sized facilities looking for perhaps one product to fulfill their dewatering needs.

The platform is engineered to deliver a more intuitive operation experience via Pioneer's new touchscreen interface, known as SmartPrime. The control interface features an easy-to-use platform that's as intuitive to use as a mobile app, according to Mario DeSimone, Pioneer Pump product manager. Users can handle all aspects of operation from a streamlined central hub with easy-to-navigate graphics. SmartPrime creates a fast startup and simple monitoring experience, eliminating the need for complex keypad setup, advanced programming skills and specialized training.

"Our goal was to optimize motor control for electric-driven surface pumps, even when they're being moved and restaged constantly," says DeSimone. "The system's new SmartPrime control interface has been built and configured specifically for temporary pumping installations. There's no programming learning curve for new VFD users who are accustomed to working with diesel-driven packages."

The VFD leverages Franklin Electric's proven experience with electronics as the foundation of the new offering. The VFD platform will be


ElectricPAK VFD from Pioneer Pump

available in two portable packages. The ElectricPAK VFD can be mounted to the pump skid to simplify transport and ensure that pump, motor and VFD are always ready to set up and go on the job site. Or the VFD can be mounted in its own stand-alone skid for maximum setup versatility and use with different pumping systems. The stand-alone skid features a metal cage design that keeps the VFD protected and secure during transport while providing extra protection against job site hazards. Its design includes a rigid bracket, known as a motor stool, that keeps the pump and motor permanently aligned, saving countless hours of service time. There is no need for time-consuming alignment work upon delivery or whenever the unit is moved.

"The entire system delivers optimized performance and durability to withstand tough field conditions as well as transport," says DeSimone.
503-266-4115; www.pioneerpump.com

exam STUDY GUIDE

Licensing exams can be challenging. Our **Exam Study Guide** helps you prepare by presenting questions similar to those on an actual exam. You can find many more sample questions on the *TPO* website at www.tpomag.com/study.

WASTEWATER

By Rick Lallish

What superior disinfection process is created on site, is done in an enclosed tank, and produces off-gas that must be destroyed before release to the atmosphere?

A. Ozonation
B. Chlorine
C. Peracetic acid
D. Ultraviolet radiation

ANSWER: A. The ozonation process involves the creation of ozone by feeding oxygen through electrodes (6,000-20,000 volts). This creates ozone, which can be used as disinfectant. The gas is highly unstable, but when dosed properly, it is very efficient at disinfecting wastewater effluent of bacteria, viruses, protozoa and other microorganisms as well as some contaminants of emerging concern. However, the off-gas is extremely hazardous and must be destroyed or recycled before any release to the atmosphere. More information may be found in the WEF textbook *Wastewater Treatment Fundamentals III: Advanced Treatment,* Chapter 5.

DRINKING WATER

By Drew Hoelscher

An operator uses a nonionic polymer as a filter aid. Under optimum operating conditions, what dosage would be considered normal?

A. 0.1 mg/L
B. 1.0 mg/L
C. 10 mg/L
D. 15 mg/L

ANSWER: A. To reduce the risk of turbidity breakthrough, operators may dose the filter influent with a high-molecular-weight polymer. Usually, polymers fed as a filter aid are nonionic or slightly anionic. The polymer helps strengthen the bonds between the particles and helps coat the filter media. To prevent reaching terminal headloss too quickly, operators should dose the filter aid at about 0.1 mg/L.

ABOUT THE AUTHORS

Rick Lallish is water pollution control program director and Drew Hoelscher is program director of drinking water operations at the Environmental Resources Training Center of Southern Illinois University Edwardsville. tpo

worth noting

people/awards

The **Johnson County Wastewater Tomahawk Creek Wastewater Treatment Facility** in Kansas received a 2023 Best Projects Award from Engineering News Record Midwest.

The **Peirce Island Wastewater Treatment Facility** in Portsmouth received a 2023 Wastewater Plant of the Year award from the New Hampshire Department of Environmental Services and New Hampshire Water Pollution Control Association.

The **Palm Beach County Water Utilities Department** received two honors from the National Association of Clean Water Agencies. The Western Region North Wastewater Treatment Facility and Southern Region Water Reclamation Facility earned the Gold Award.

Two Centennial Water and Sanitation District employees from Highlands Ranch, Colorado, were recognized by the Rocky Mountain Section of the American Water Works Association. **John Droullard** received the 2023 Ralph M. Leidholdt Outstanding Water Treatment Plant Operator Award. **Andy Smith,** water treatment plant maintenance lead, received the 2023 Water Treatment Plant Maintenance Award.

Joe Suleyman, New Hanover County recycling and solid waste director, received the Pelican Award from the North Carolina Coastal Federation for initiatives that encourage responsible waste disposal and recycling.

Gary McCoy, director of water treatment for the Macon Water Authority, was named vice president of the Georgia Association of Water Professionals for 2023-24.

The Town of Brattleboro, Vermont, recognized **Harvey Dix,** chief wastewater treatment plant operator, and **Mike Ethier,** wastewater treatment operator, for more than 60 combined years of service. Both retired in September.

Jim Muscat, water superintendent with the Big Sky County (Montana) Water and Sewer District, retired after 28 years of service.

The **Duck River Utility Commission** in Tullahoma, Tennessee, two best-tasting water competitions at the 2023 Kentucky-Tennessee Water Professionals Conference and the 2023 Water For Life event.

Rick Rogers, manager of the San Lorenzo Valley (California) Water District, retired after nearly 50 years of service.

events

Dec. 5-7
AWWA North American Water Loss Conference 2023, Colorado Convention Center, Denver. Visit awwa.org.

Dec. 5-7
Maine Rural Water Association Annual Conference and Trade Show, Cross Insurance Center, Bangor. Visit mainerwa.org.

Dec. 6
AWWA 2023 Regulatory Update, webinar. Visit awwa.org.

Dec. 13
AWWA Recapping 2023 and Looking Forward to 2024 in the Water Sector: A Conversation with the Three Ratings Agencies, webinar. Visit awwa.org.

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